Scotsman®
Ice Systems

MC SERIES CUBERS

TECHNICAL SERVICE TRAINING

Welcome to another Scotsman technical service presentation. This one will cover the MC Series Ice Cube Machines models **MC 15, MC 45** and **MC 1210.**

MC 15 + B 350

MC 45 + B 550

MC 1210 + B 120

MC SERIES

TOPICS

On the next slides are shown the following steps by steps procedures:

- **UNPACKING**
- **INSTALLATION**
- **START UP AND OPERATIONAL CHECKS**
- **OPERATING PRINCIPLES and COMPONENTS**
- **MAINTENANCE**
- **SERVICE ANALYSIS**

MC SERIES

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MC SERIES

UNPACKING

MC SERIES

UNPACKING

The machines are supplied in a carton box secured by two plastic strips to a wooden base. Check first the outside conditions of carton box and wooden base then cut the two plastic strips, remove the tape and then the carton box.

MC 45

MC SERIES
UNPACKING

Visually inspect the exterior of the machine then remove the two side panels……

……..and the vertical ice chute…..

MC SERIES
UNPACKING

…..unscrew

the unit frame

from the

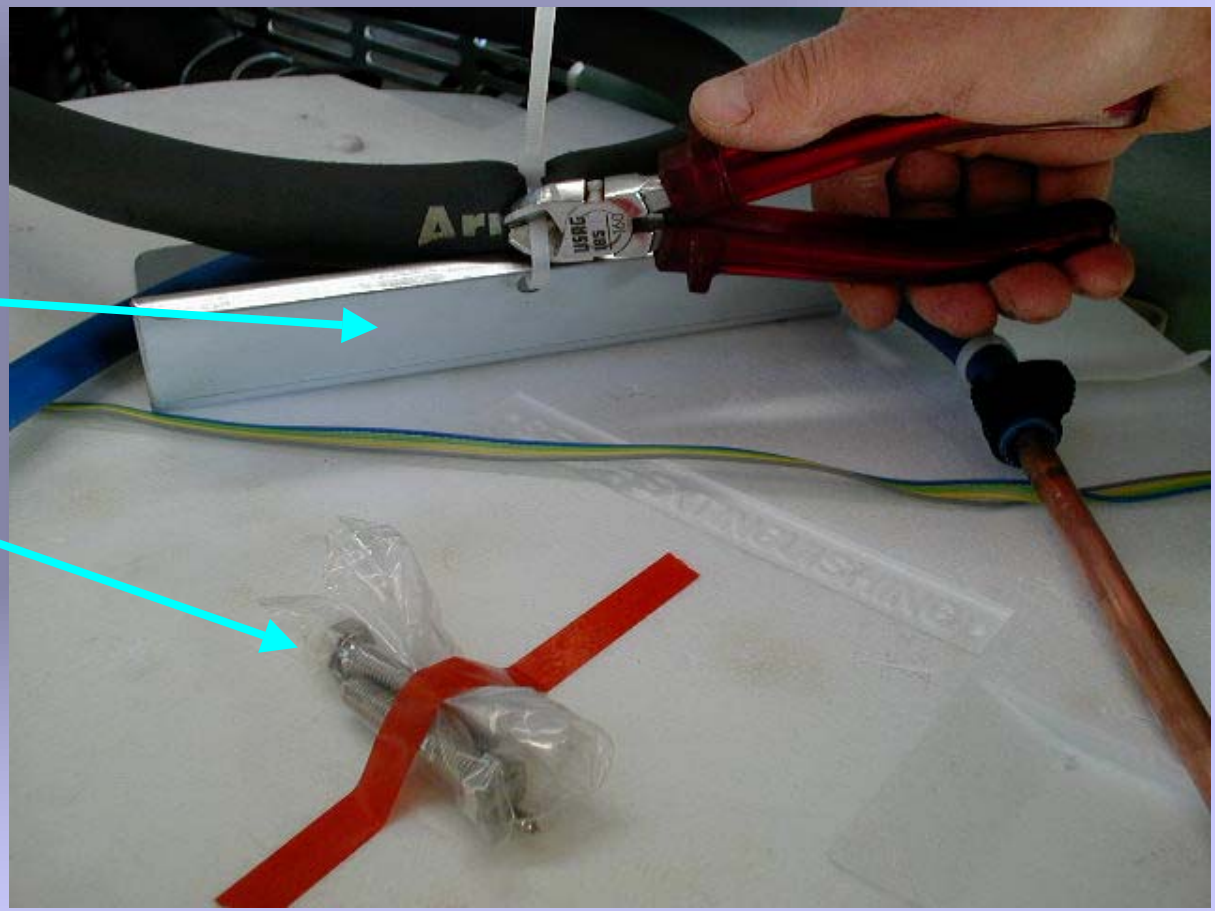
wooden

base….

MC SERIES
UNPACKING

…..then remove from the inside of the machine all the polystyrene protection as well as the….

…..the Optical Ice Level Control bracket and the securing screws and fiber washers.



MC SERIES
UNPACKING

The Modular Cuber machines require for the installation the use of a companion storage bin to store the ice produced.

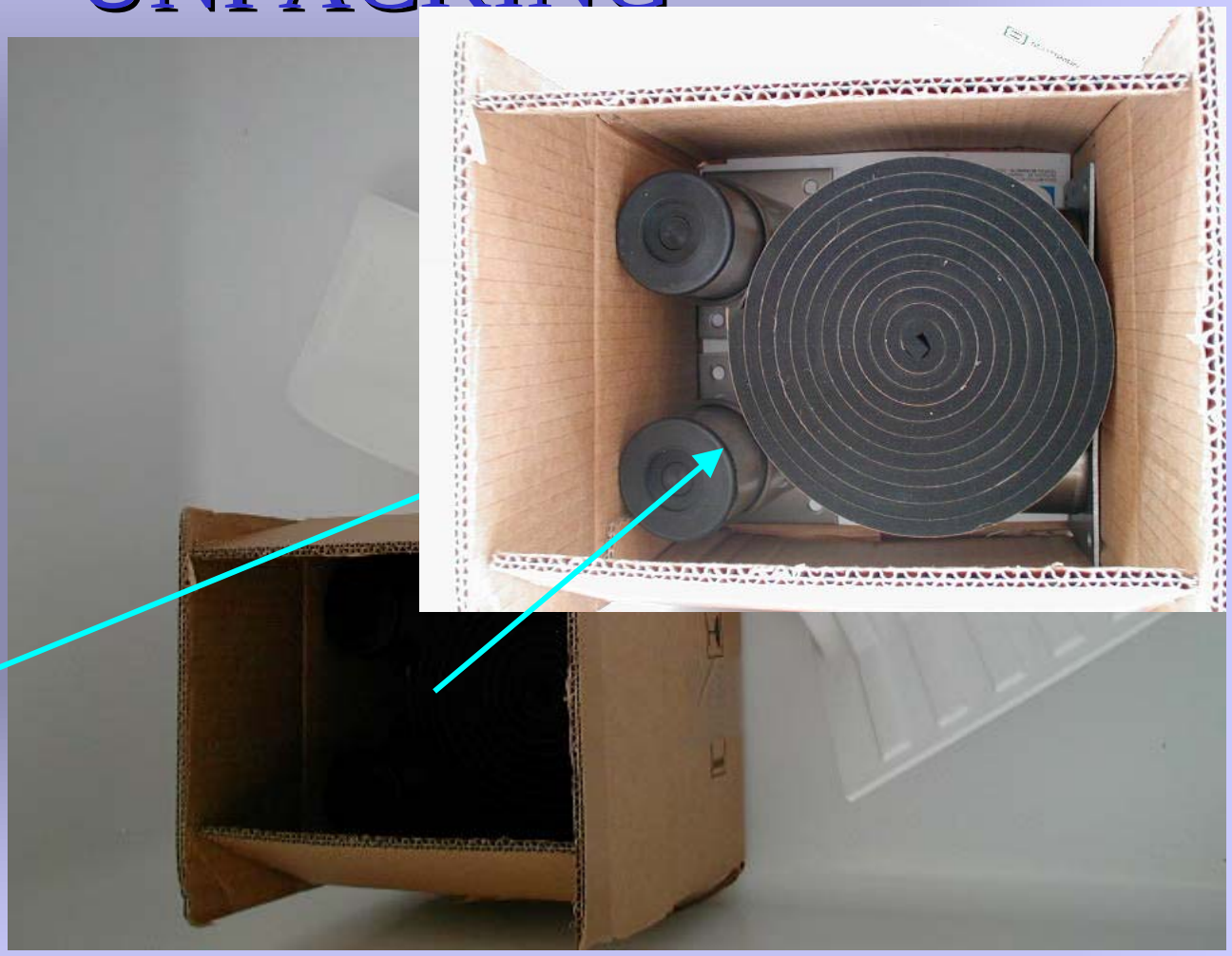
Storage bin required are:

- **B 350/550 for MC 15/45**
- **B 120 for MC 1210**

B 550

MC SERIES
UNPACKING

Unpack the storage bin and visually inspect the exterior then remove from the inside the carton box containing the plastic deflector as well as the legs and rubber strip.



MC SERIES
UNPACKING

Unloose the two screws holding the drain fitting protection and remove it

MC SERIES

INSTALLATION

MC SERIES
INSTALLATION

Install the four legs sockets on the bottom base of the storage bin as well as the metal legs.

MC SERIES
INSTALLATION

Place the storage bin

in its definitive

location then install

on top of the same the

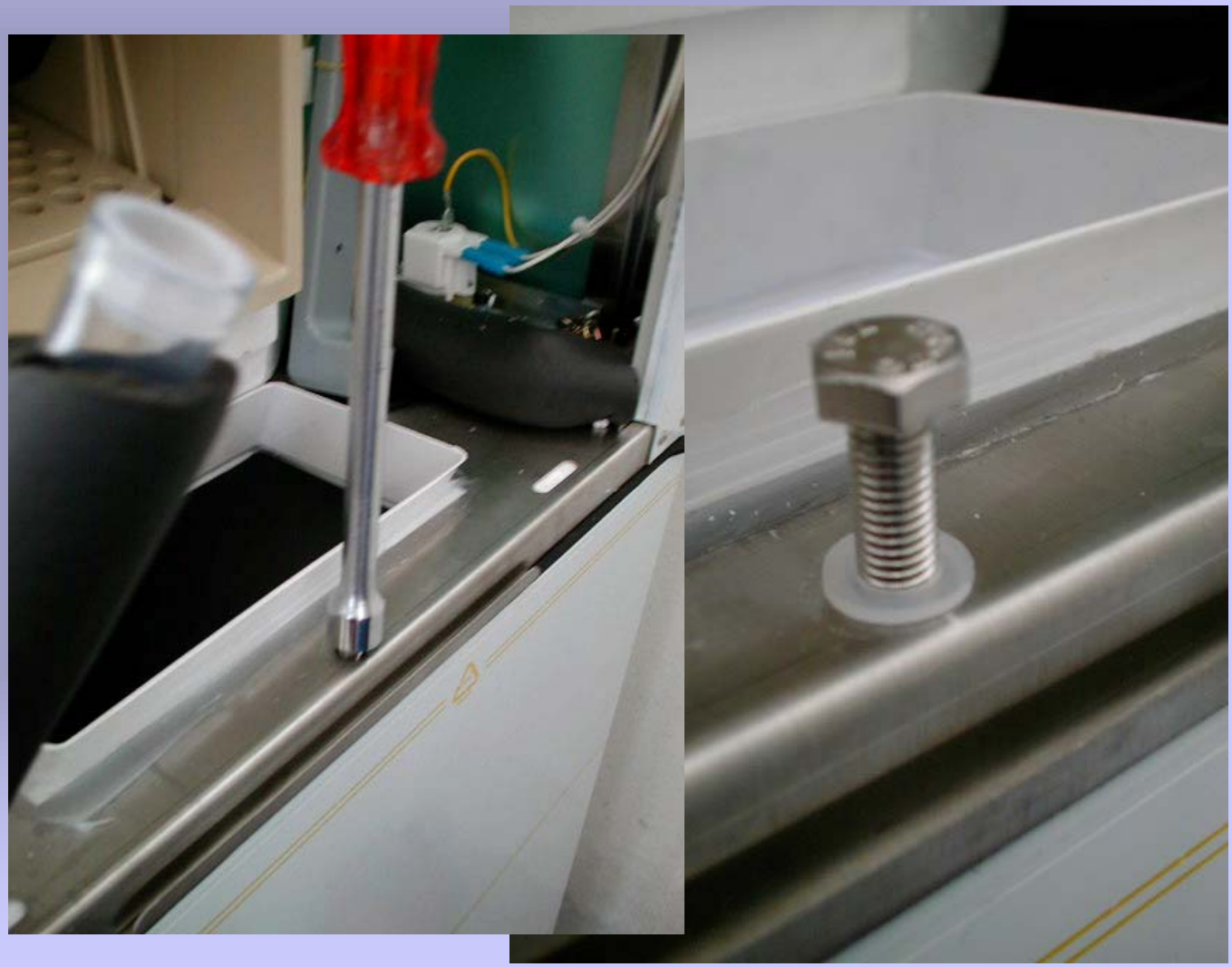
ice machine.

MC SERIES
INSTALLATION

Place between the machine and the storage bin the metal bracket of the Ice Level Control.

MC SERIES
INSTALLATION

Secure the machine to the storage bin by means of the two screws supplied.



MC SERIES
INSTALLATION

Insert the two plastic clips into the two square holes of the S.S. bracket then ….

MC SERIES
INSTALLATION

……cut the plastic strip

securing the Optical Ice

Level Control to the suction

line of the machine.

MC SERIES
INSTALLATION

Cut the rubber plug

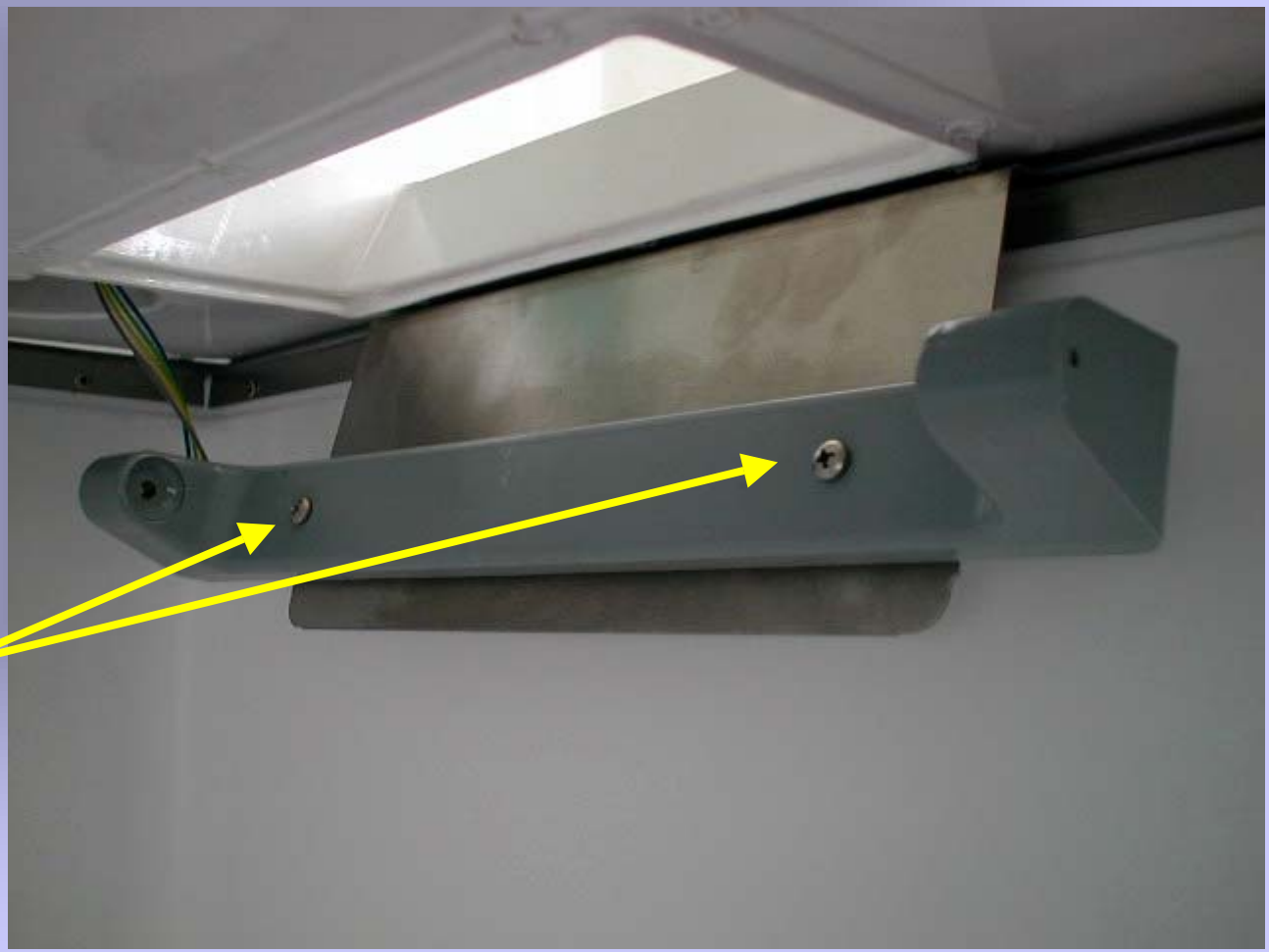
located on the right side of

the ice chute rectangular

opening then….

MC SERIES
INSTALLATION

…..drive down into the storage bin the Optical Ice Level Control and secure it with the two screws supplied with the machine.



MC SERIES
INSTALLATION

Install on the upper front side of the Ice Chute rectangular opening the Ice Cubes plastic deflector supplied with the storage bin pay attention to…..

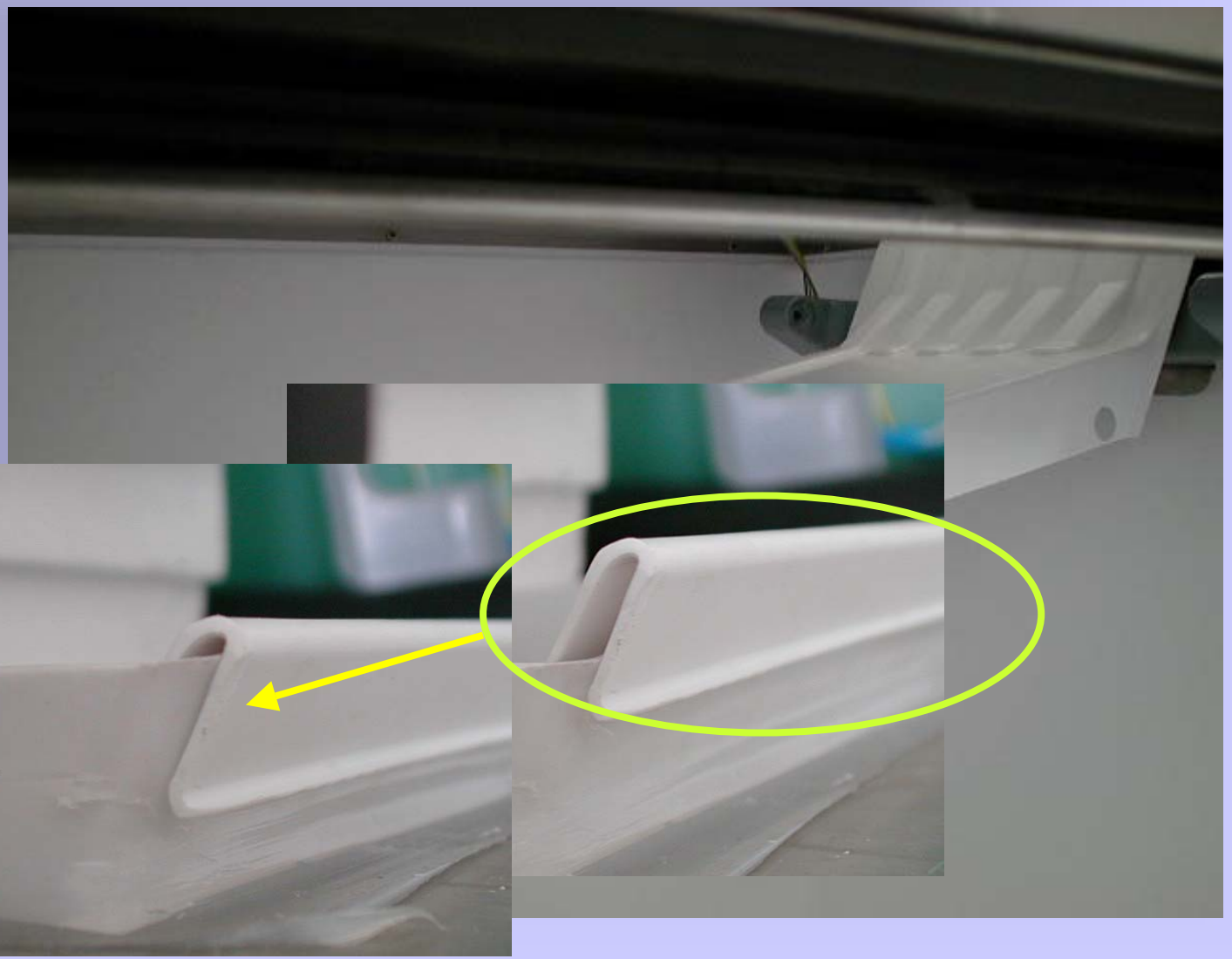
MC SERIES
INSTALLATION

….. properly

hook it on

the front

edge.



MC SERIES
INSTALLATION

Install again

the vertical

ice chute

with its

cover…..

MC SERIES
INSTALLATION

….. paying

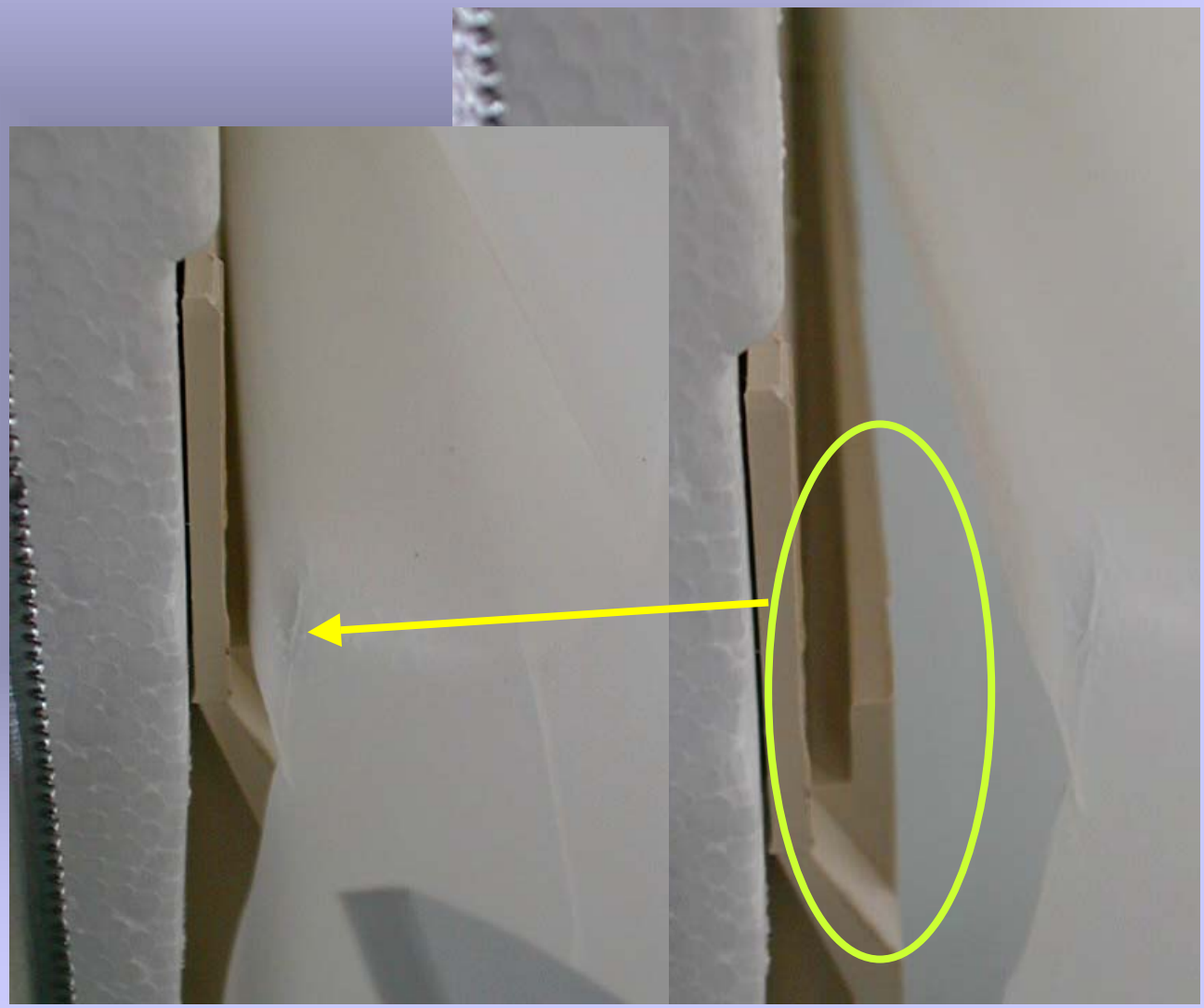
attention to

hook it on the

upper side of

the evaporator

opening .



MC SERIES
INSTALLATION

Check the data plate of the machine located on the rear panel for correct voltage as well as for the proper wiring/fuse size.

Remember that all machines require a solid earth wire.

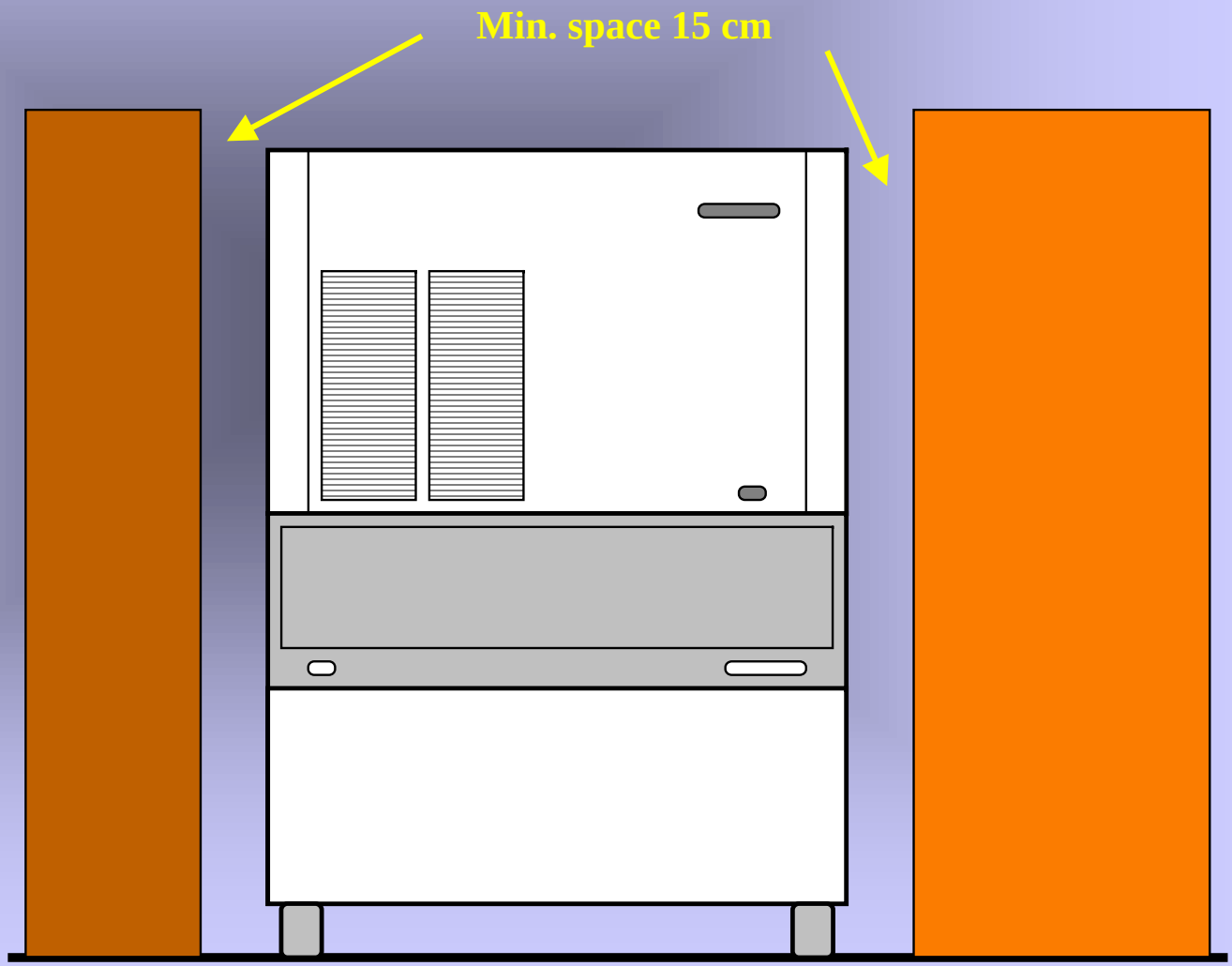
MC SERIES
INSTALLATION

Check for the correct water and ambient conditions that should be:

- Min. ambient temperature 10ºC (50F)
- Max. ambient temperature 40ºC (100F)
- Min. water temperature 5ºC (40F)
- Max. water temperature 35ºC (90F)
- Min. water pressure 1 bar (14 PSI)
- Max. water pressure 5 bar (70 PSI)

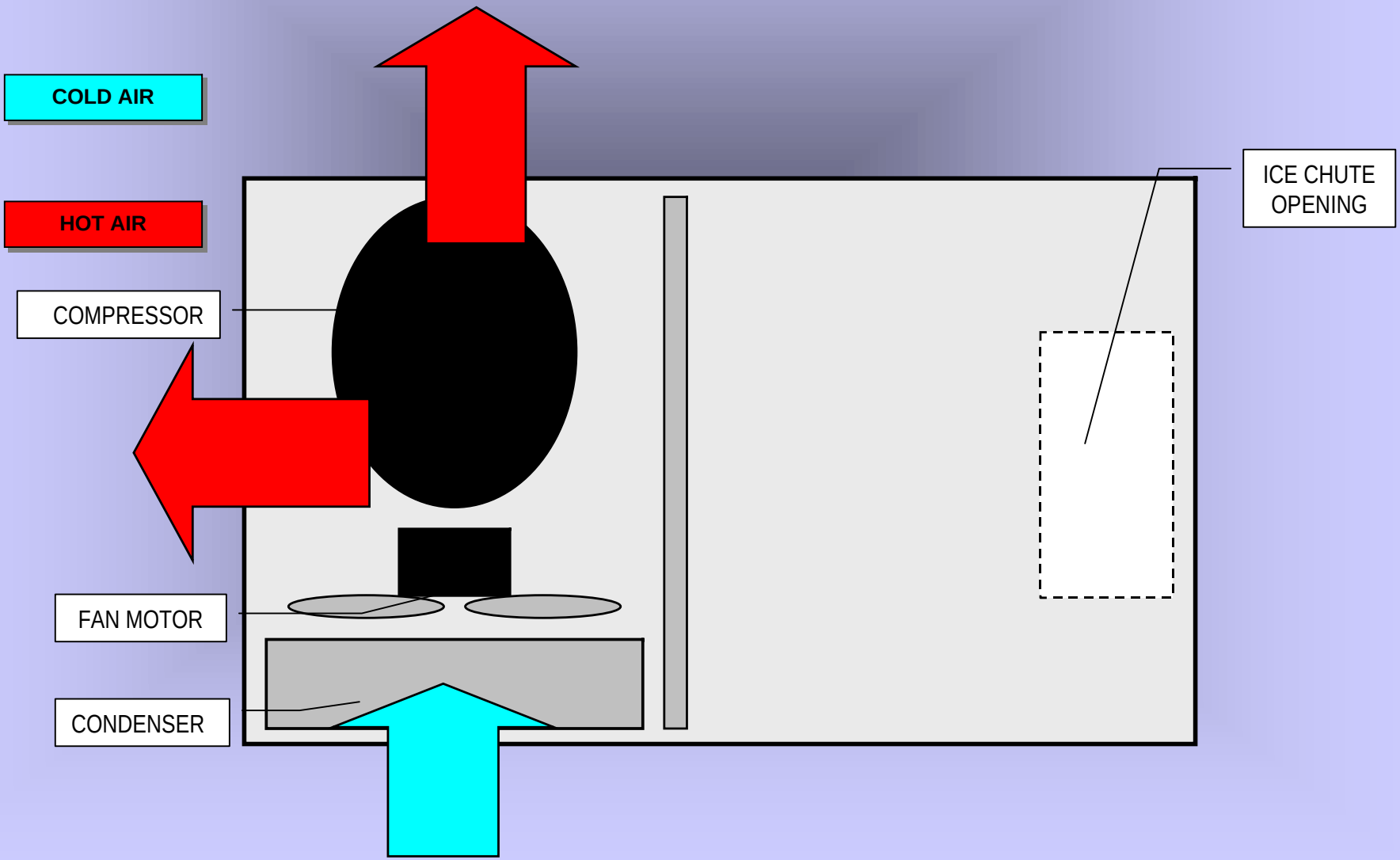
MC 15-45
INSTALLATION

Adequate space must left be for proper water and electrical connections on the rear side of the machine. A minimum clearance of 15 cm on both sides for best routing air.



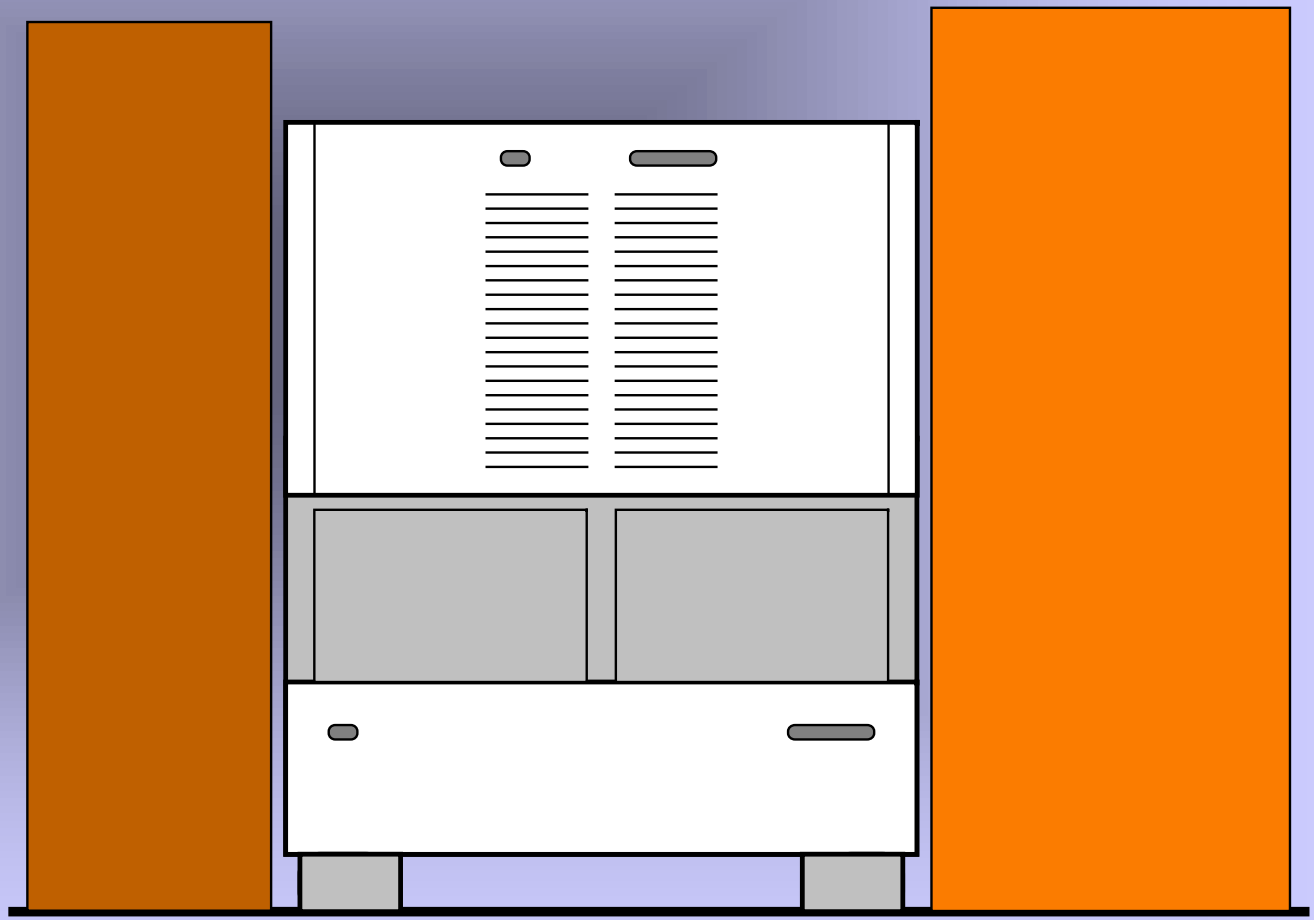
MC 15-45

INSTALLATION - AIR CIRCULATION



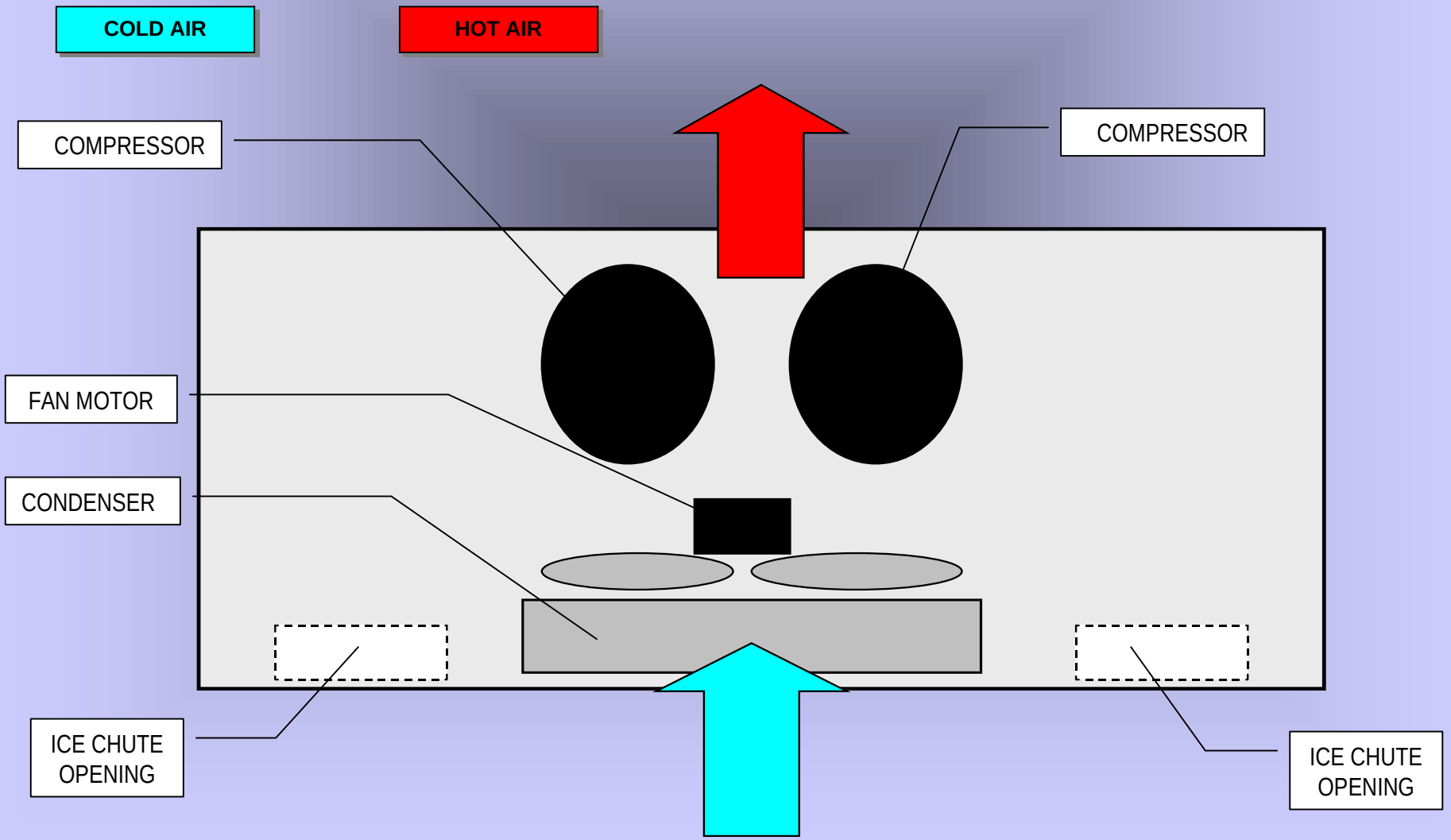
MC 1210
INSTALLATION

Adequate space must be left for proper water and electrical connections on the rear side of the machine as well as for best routing air.



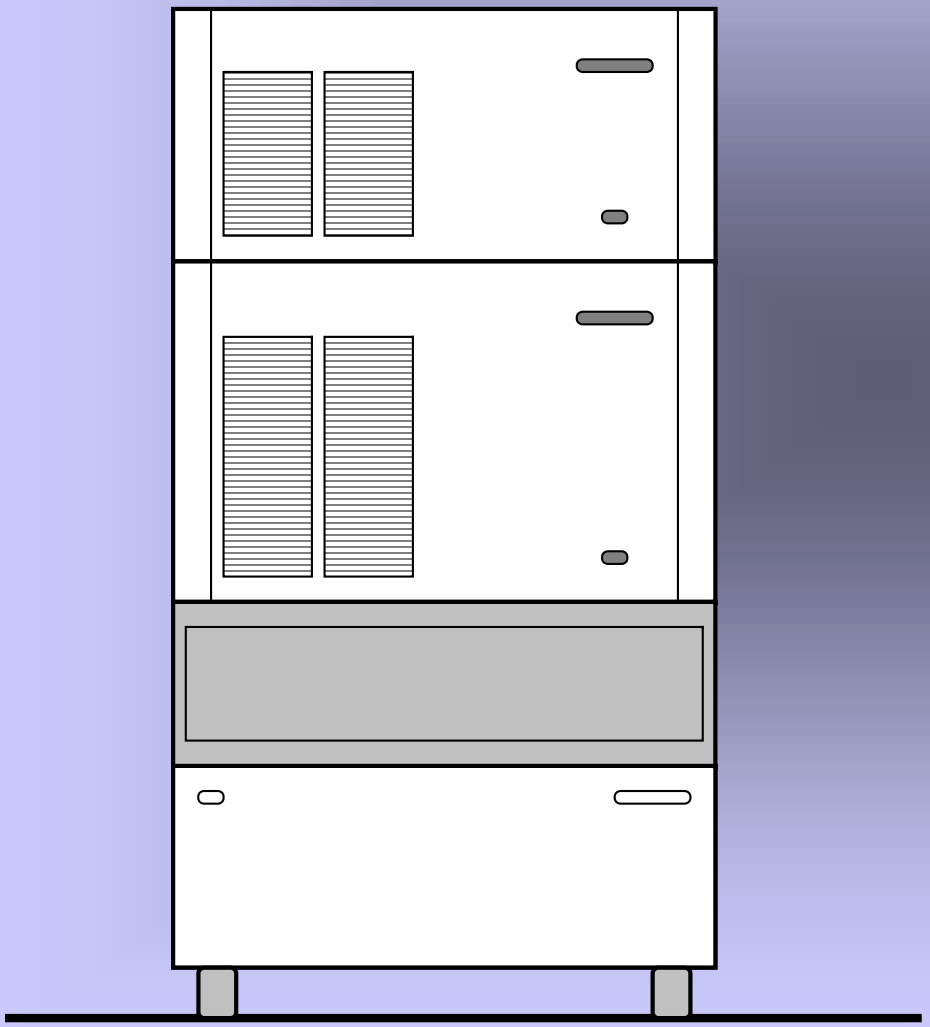
MC 1210

INSTALLATION - AIR CIRCULATION



MC 15 + MC 45

STACKING INSTALLATION



MC 15 + MC 45
STACKING INSTALLATION

For the Staking installation a proper kit - KSC 11 - is required.

It consists of:

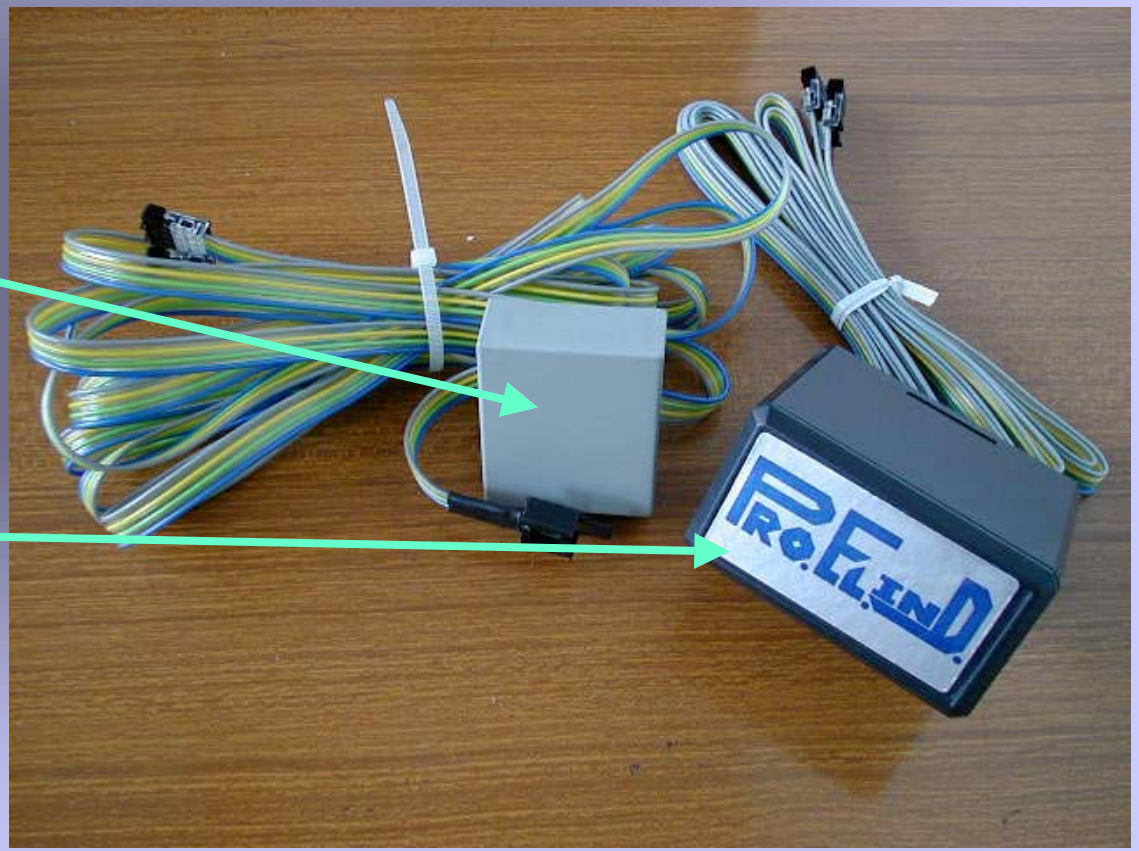
- Ice connecting chute/s

MC 15 + MC 45
STACKING INSTALLATION

- Ice connecting chute/s
- Interface PC Boards

made by SYEN…

….. and by Pro.El.Ind.



MC 15 + MC 45
STACKING INSTALLATION

- Ice connecting chute/s
- Interface PC Board
- Gasket

MC 15 + MC 45
STACKING INSTALLATION

- Ice connecting chute/s
- Interface PC Board
- Gasket
- Extension optical cable

MC 15 + MC 45

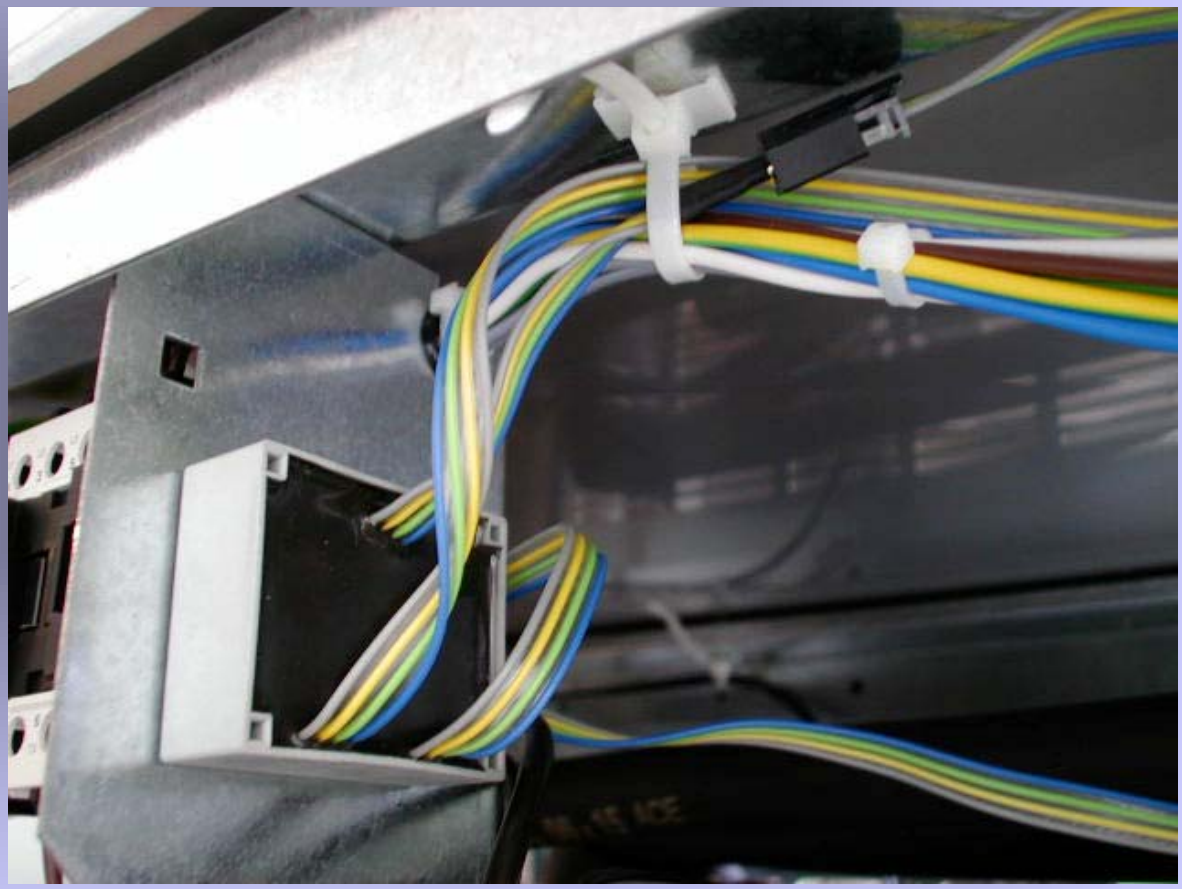
STACKING INSTALLATION

The Ice connecting chute/s must be installed through the bottom rectangular opening of the Top machine and it connects the Ice Chute of the upper machine with the one of the bottom machine.

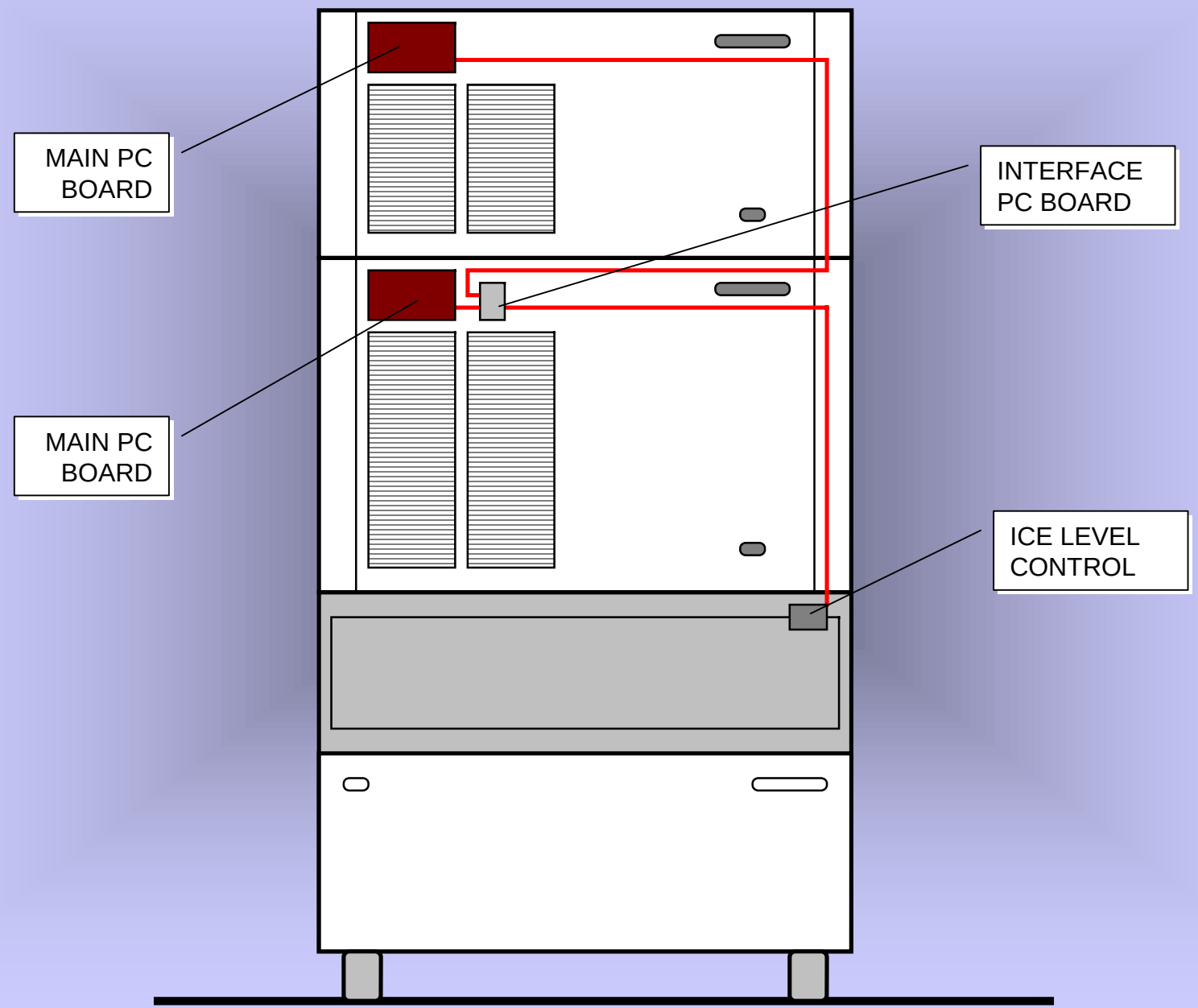
MC 15 + MC 45

STACKING INSTALLATION

The Interface PC Board must be installed in the bottom machine. The Optical Ice Level Control must be connected to its inlet and, the two Main PC Boards of bottom and upper machine to the outlets, in order to switch off both machines as soon as the ice is stored between the two eyes of the optical ice level control.



STACKING INSTALLATION



MC 15 + MC 45

STACKING INSTALLATION

ATTENTION!!!

It is IMPERATIVE that all the three PC Boards (Ice Machines ones + the Interface PC Board) MUST BE of the same supplier (SYEN or Pro.El.Ind.).

The use of mixed PC Boards can cause the tripping OFF of one or both machines at Storage Bin Full with no ice between the Optical Ice Level control.

MC 15 + MC 45

STACKING INSTALLATION

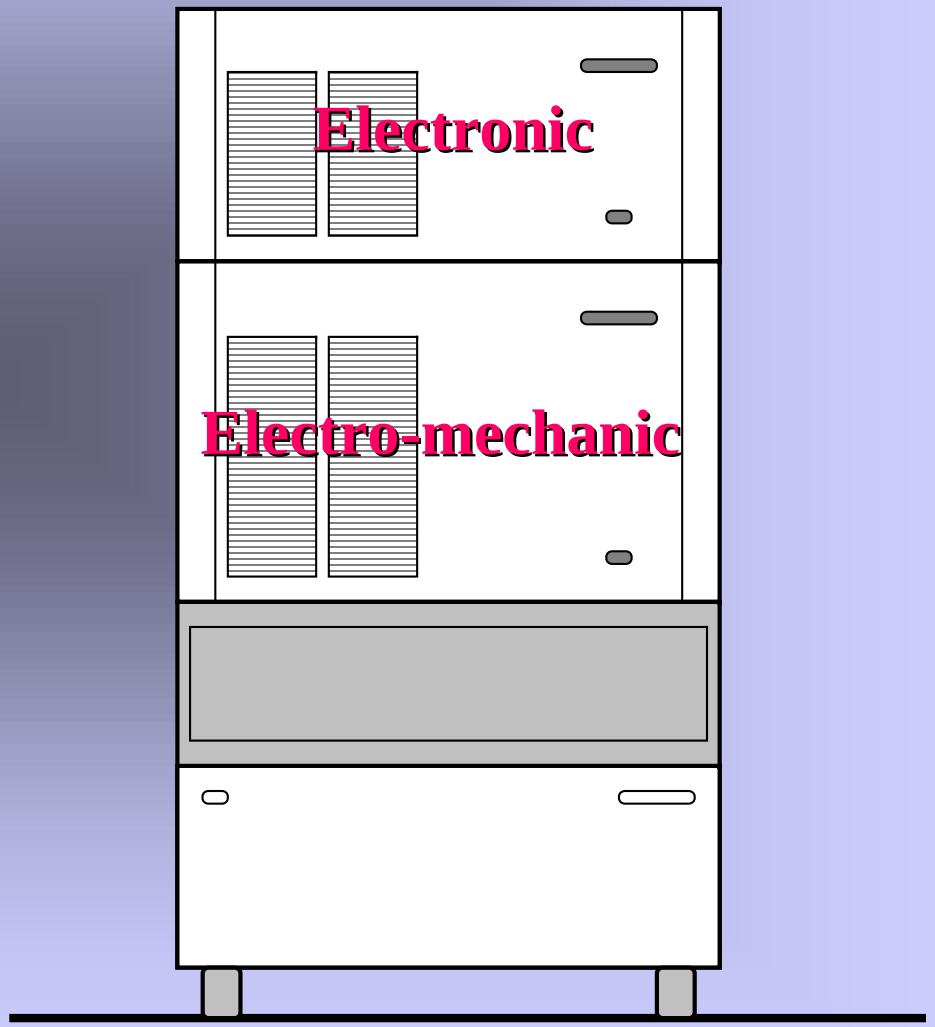
The gaskets must be installed in the space remaining between the bottom base of the upper machine and the front panel of the lower unit so to seal completely any gap in between.

MC 15 + MC 45

STACKING INSTALLATION

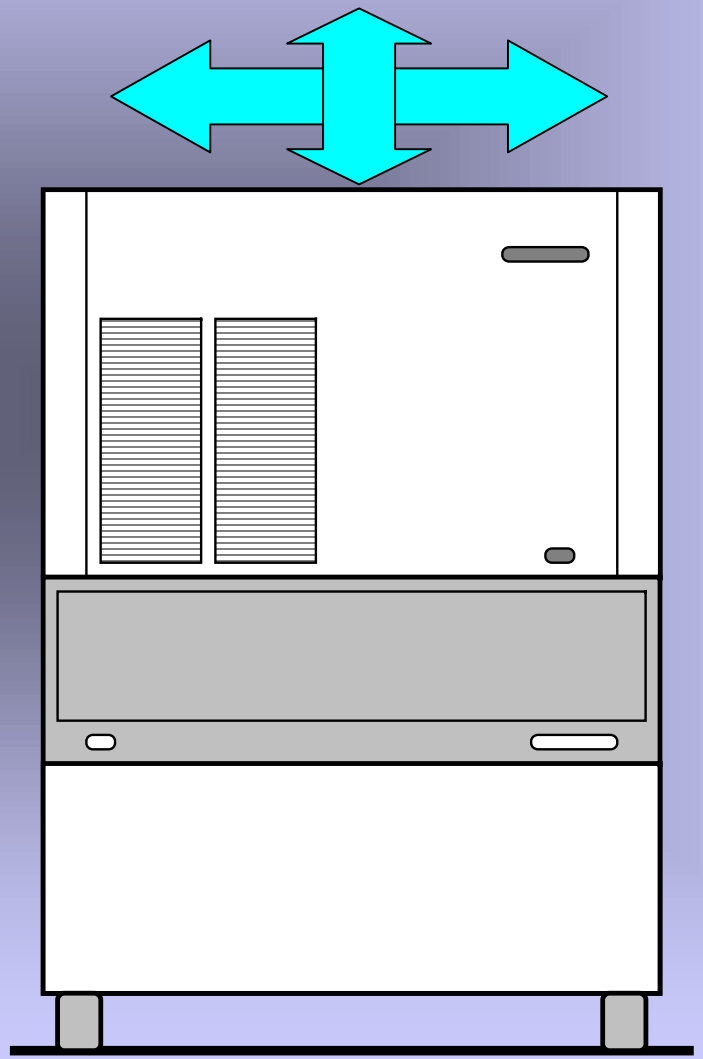
The Extension cable must be used only when a current Electronic machine is installed on top of an Old Electro-mechanic unit when the standard length of the cable of the optical ice level control is too short to connected it to the PC Board.

The electrical connection must be installed in a dry environment in order to avoid any possibility of “faulty contact”.



MC SERIES
INSTALLATION

Level the unit on both directions front to rear and right to left side using the adjustable legs.



MC SERIES
INSTALLATION - ELECTRICAL

Install, on the cable supply with the machine, an adaguate electrical plug according to the local standards and regulations.

Maximum voltage variation should be ±10%.

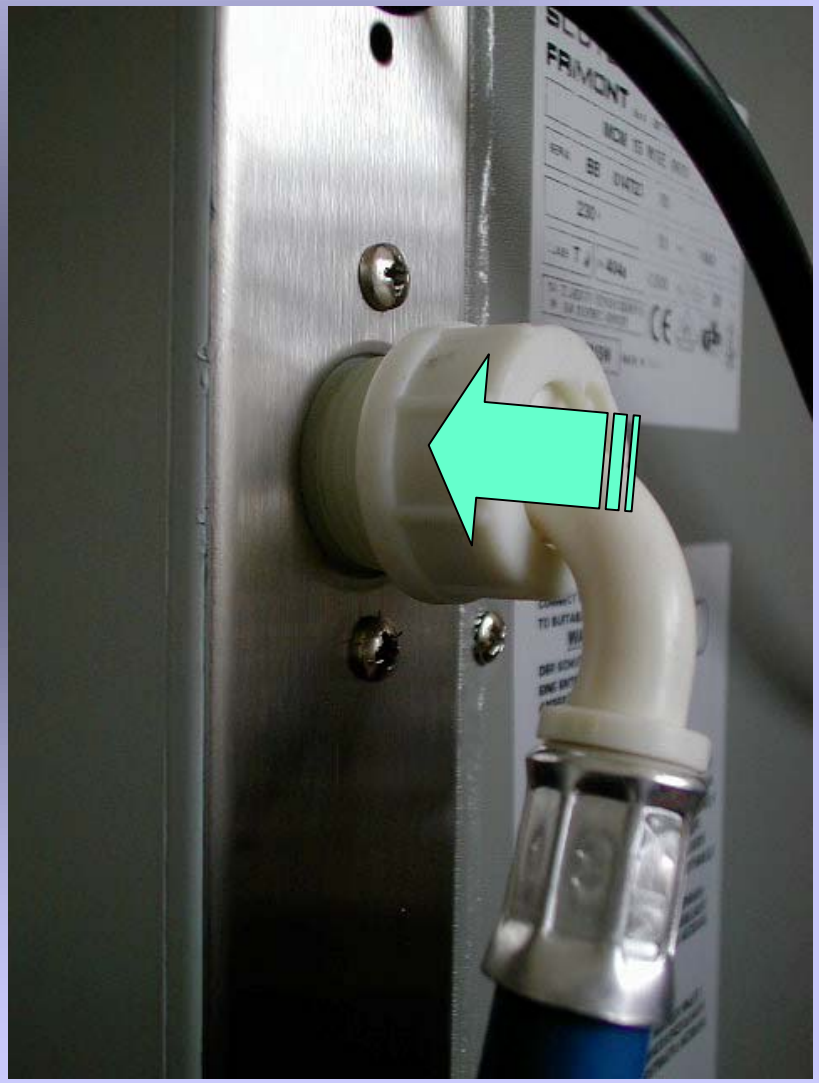
Machine must be individually fuse protected.

MC SERIES

INSTALLATION - WATER IN

Connect the water inlet 3/4” male threat of the water inlet solenoid valve to the water supply line by means of the rubber hose provided with machine.

Install on water supply line closed to the machine a water valve (tap).



MC SERIES

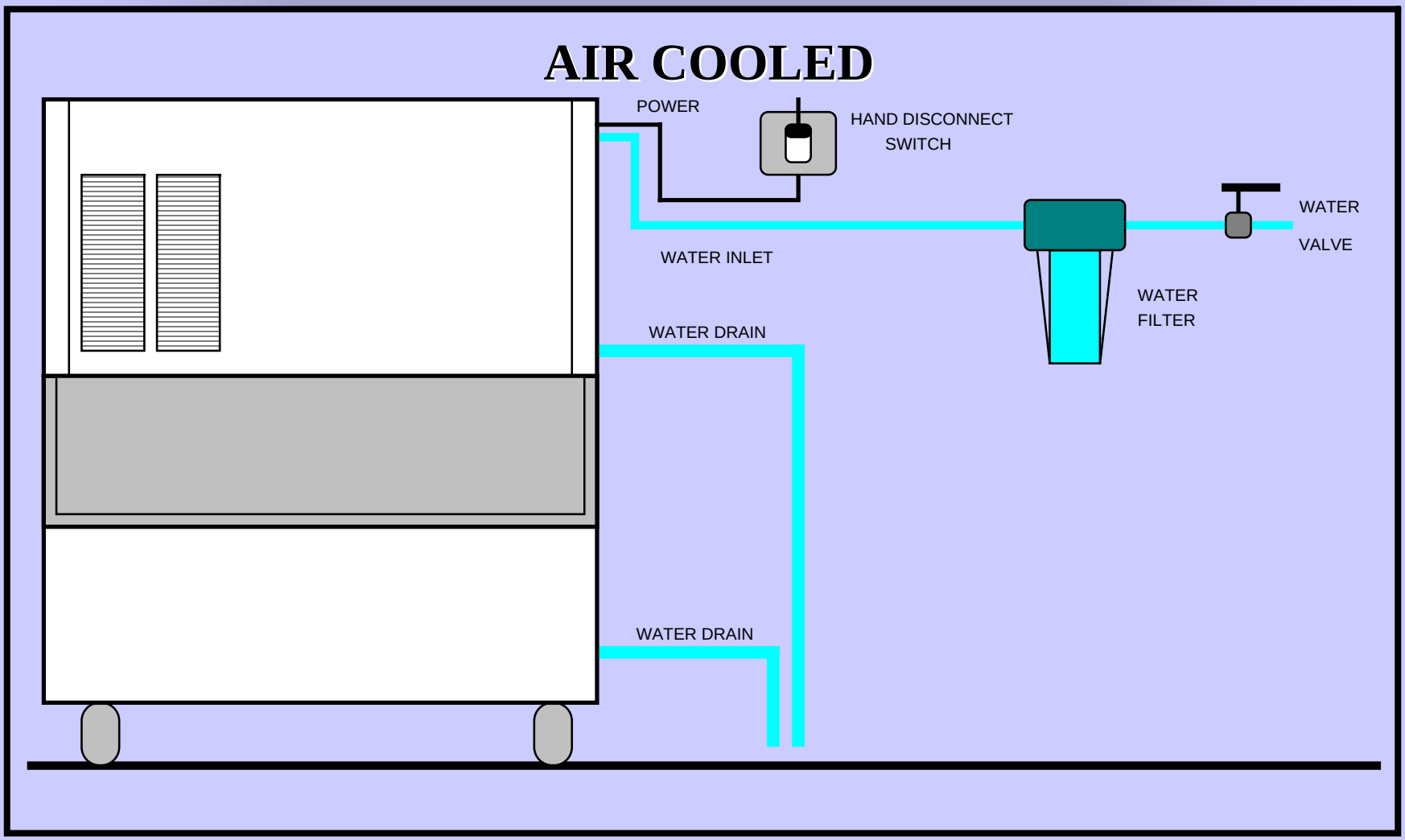
INSTALLATION - WATER DRAIN

Connect the 20 mm O.D. fitting (2 on model MC 45) of the water drain with the flexible hose supply with the machine securing it by its proper clamp.

A vented drain it is recommended in order to help the drainage of the water.

MC SERIES

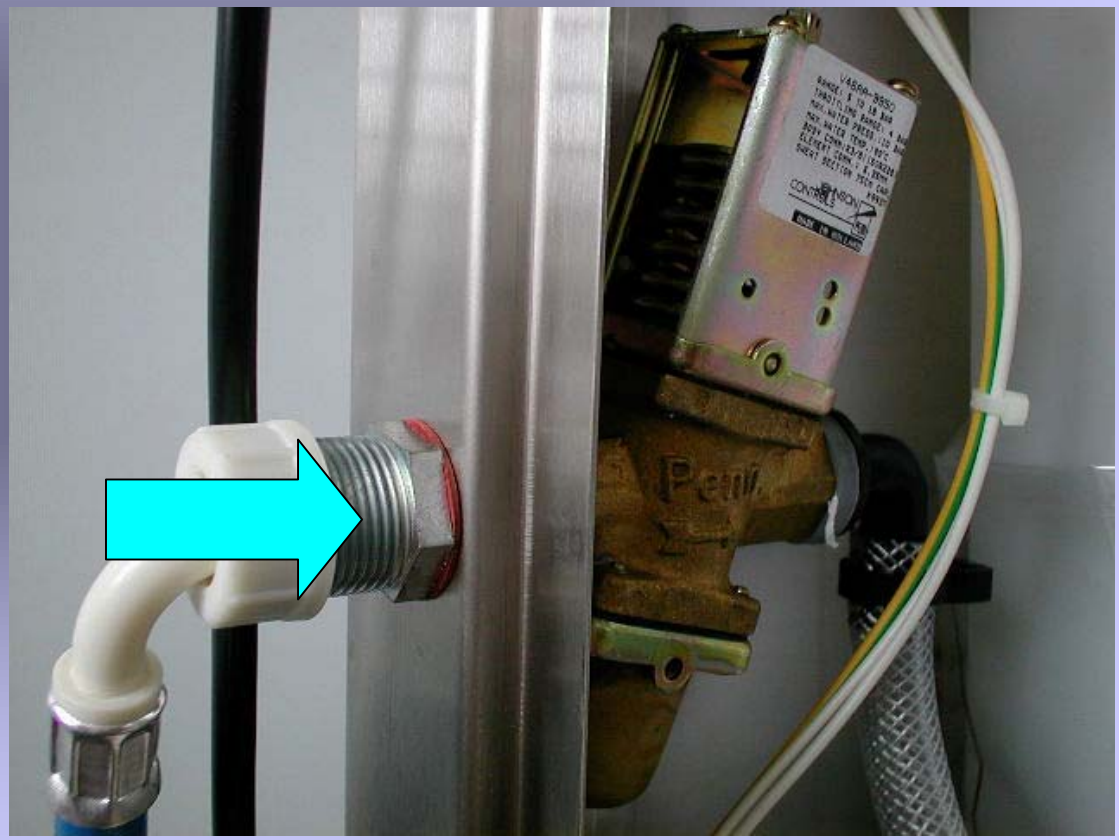
TYPICAL INSTALLATION



MC SERIES

INSTALLATION - WATER IN

On the water cooled version there is a separate 3/4” male thread water inlet fitting connected directly to the water regulating valve that must be connect to the water supply line by means a second rubber hose provided with machine and……



MC SERIES

INSTALLATION - WATER OUT

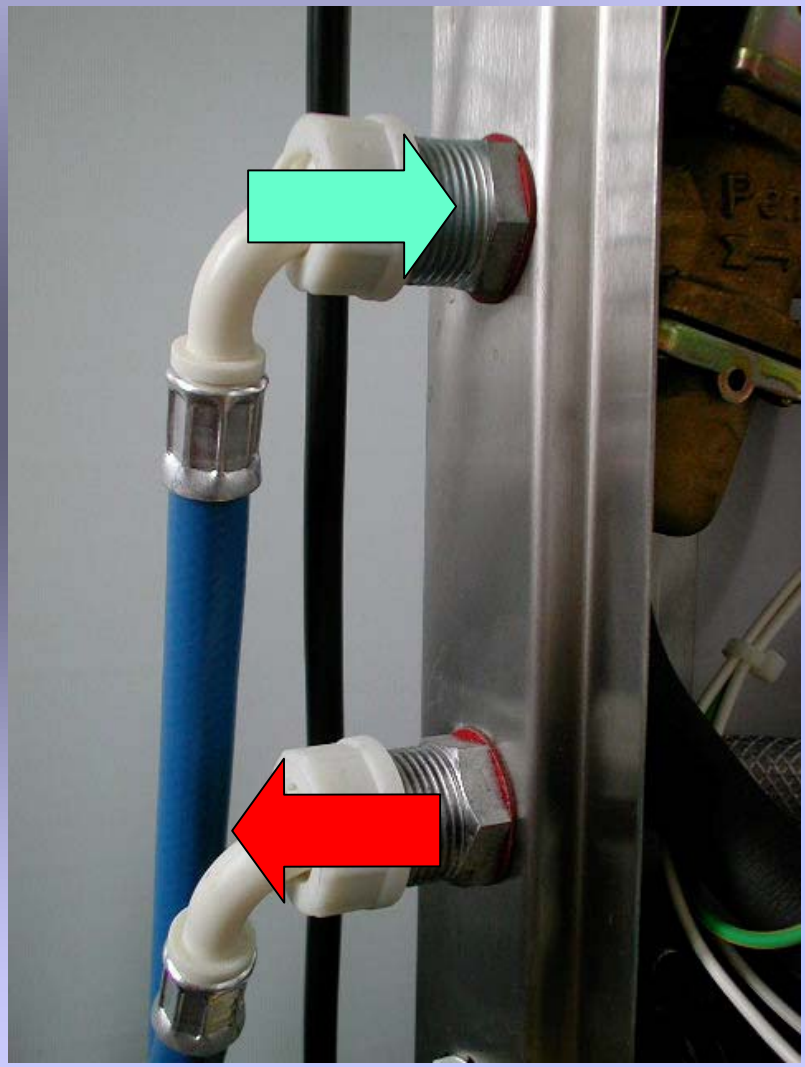
…..a second separate drain

hose must be connected to

the outlet 3/4” male fitting

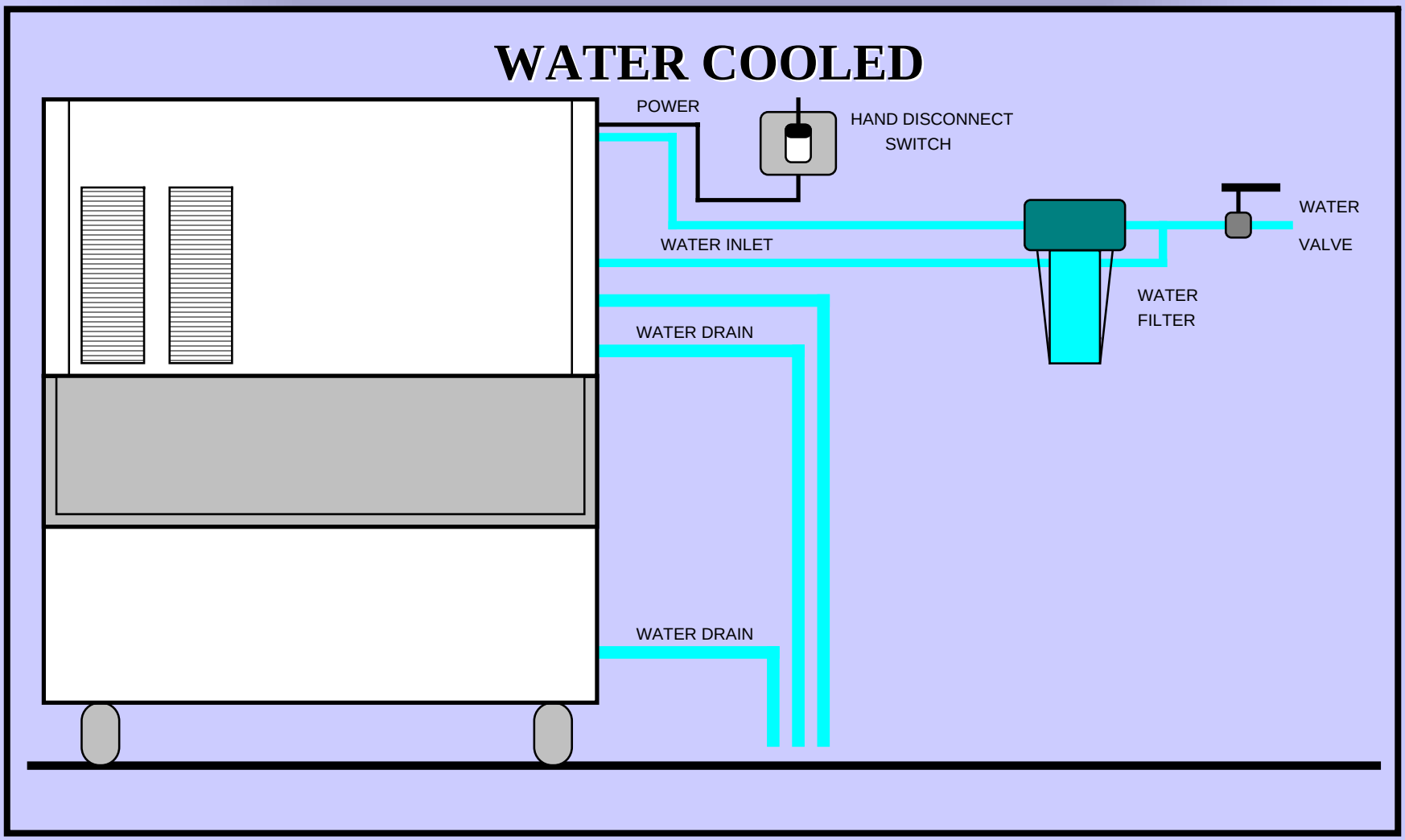
located on the upper side of

the water regulating valve.



MC SERIES

TYPICAL INSTALLATION



MC SERIES

START UP AND OPERATIONAL CHECKS

MC SERIES

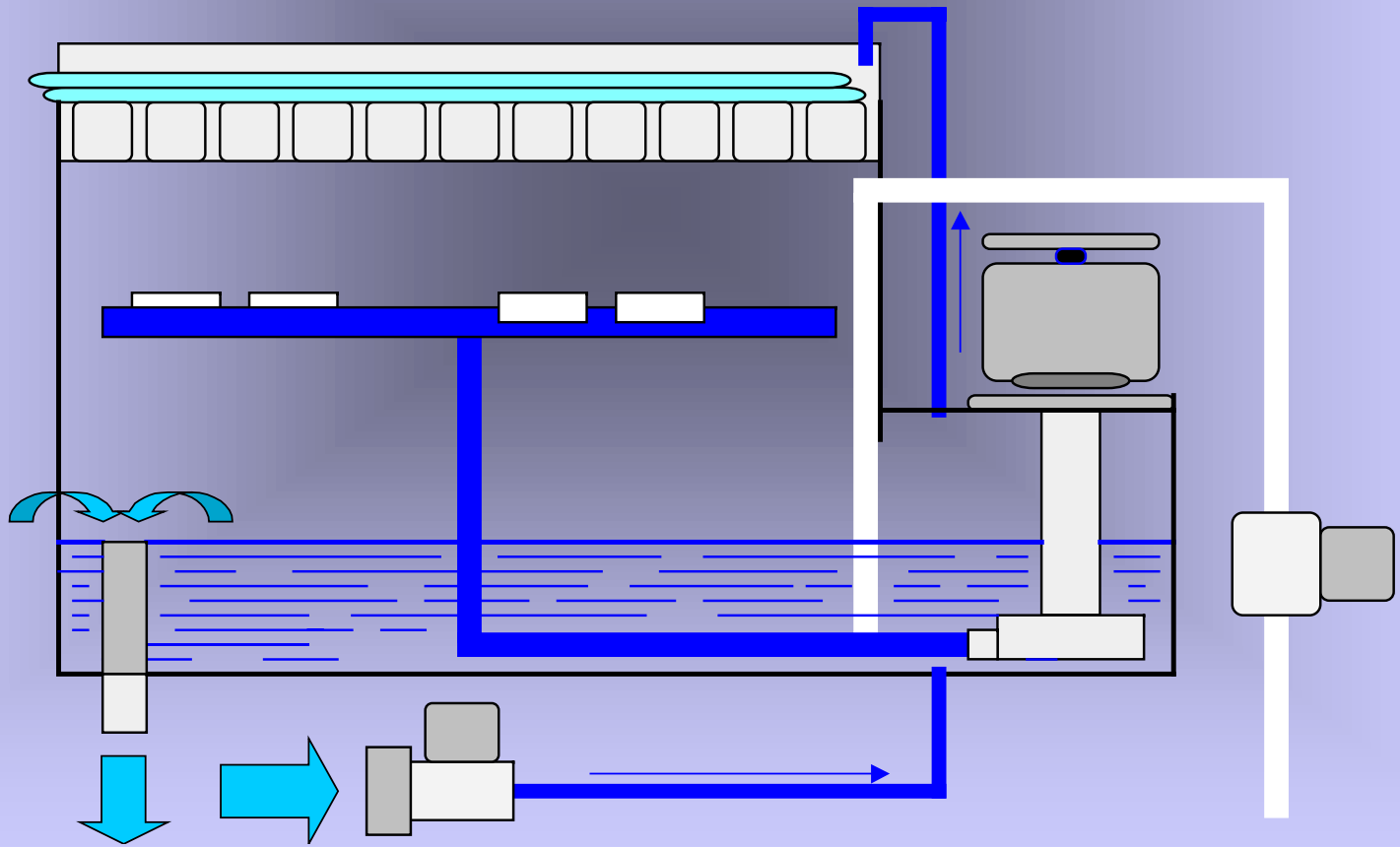
START UP AND OPERATIONAL CHECKS

- Open the water tap/valve.
- Switch ON the power on the electrical supply line.

MC SERIES

START UP AND OPERATIONAL CHECKS

The Ice Machine will start up automatically through the 5 minutes “Water Filling Phase”.

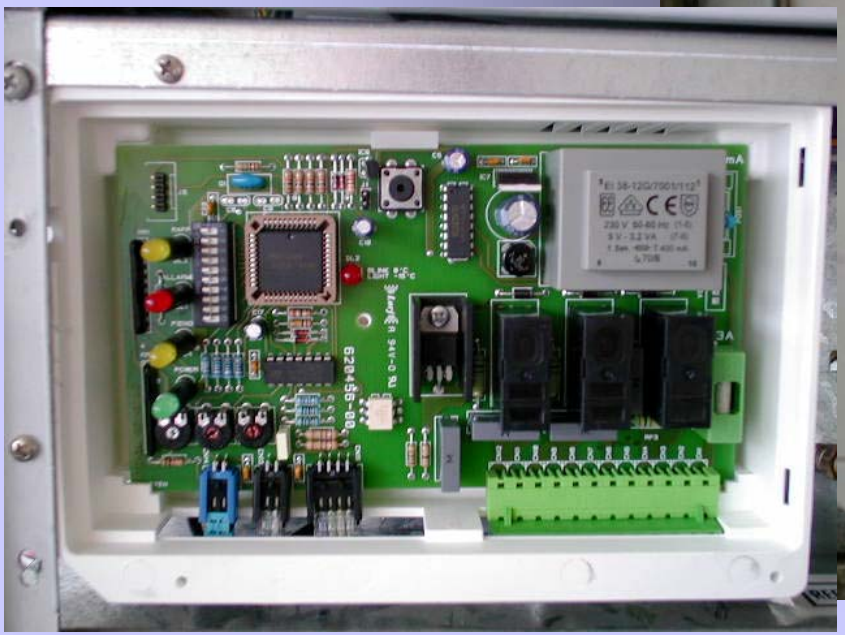


MC SERIES

START UP AND OPERATIONAL CHECKS

The components energized during the first 5’ are:

- PC Board



MC SERIES

START UP AND OPERATIONAL CHECKS

The components energized during the first 5’ are:

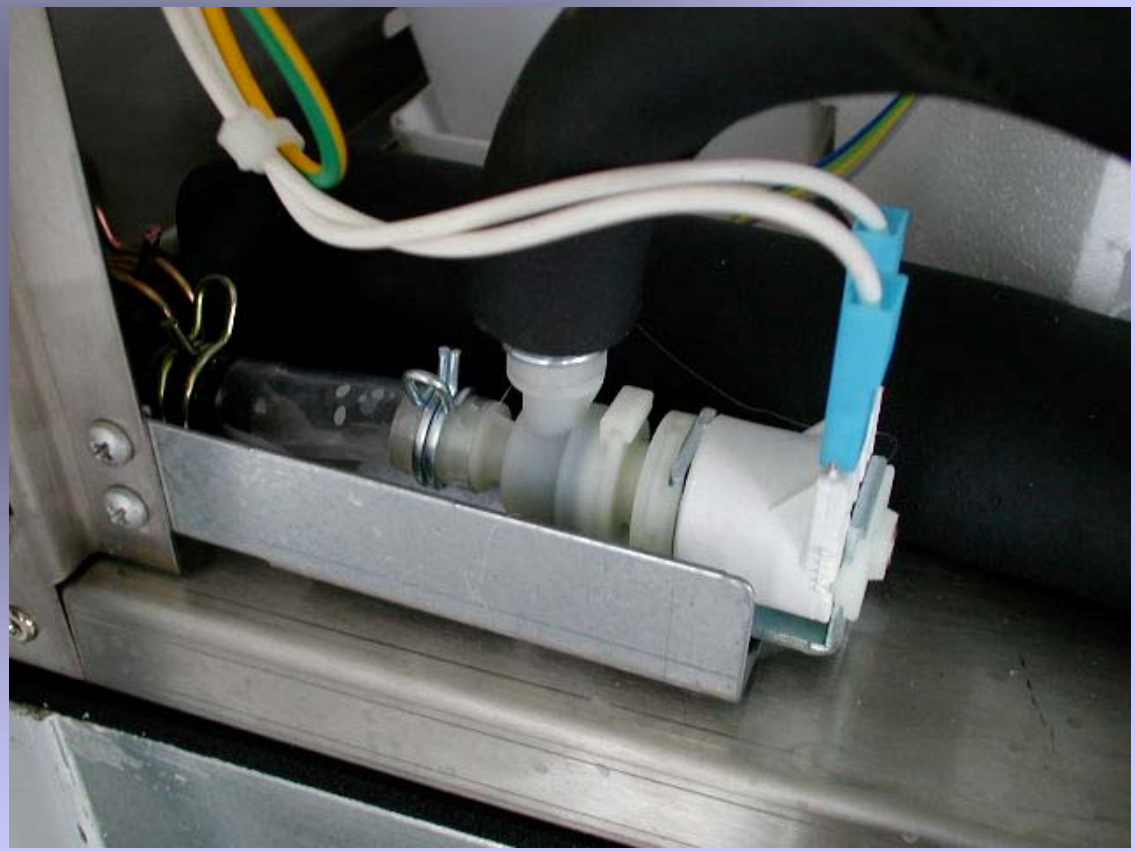
- PC Board
- Water Inlet Solenoid Valve

MC SERIES

START UP AND OPERATIONAL CHECKS

The components energized during the first 5’ are:

- PC Board
- Water Inlet Solenoid Valve
- **Water Drain/Purge Solenoid Valve**



MC SERIES

START UP AND OPERATIONAL CHECKS

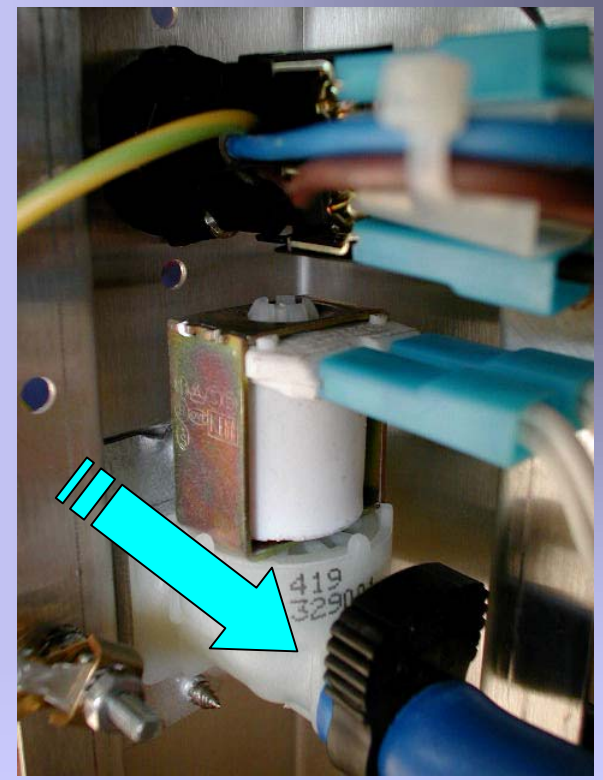
The components energized during the first 5’ are:

- PC Board
- Water Inlet Solenoid Valve
- Water Drain/Purge Solenoid Valve
- Hot Gas Solenoid Valve

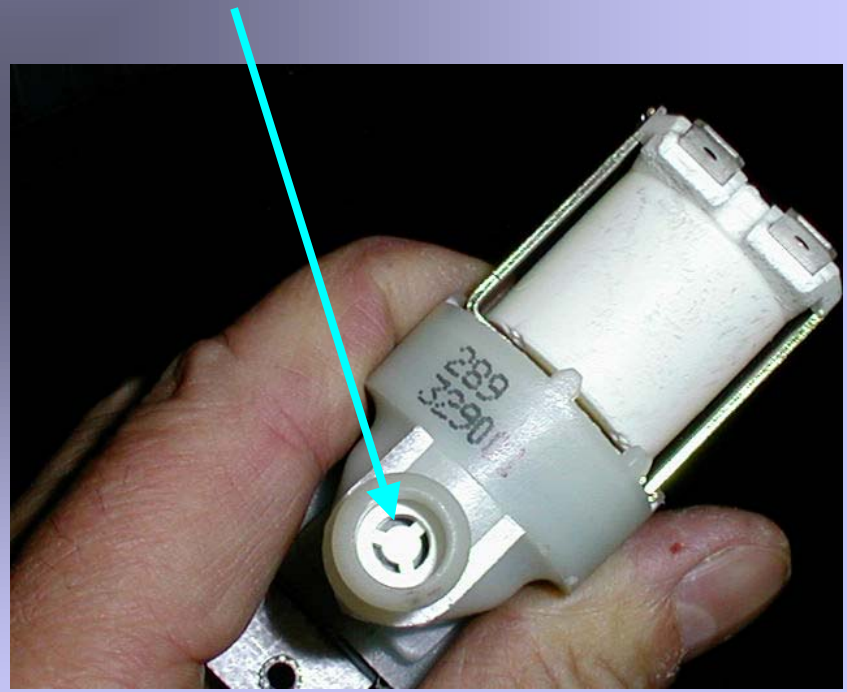
MC SERIES

START UP AND OPERATIONAL CHECKS

During the first 5’ the water goes through the Water Inlet Valve then….



….flows into the small orifice of the “Flow Control” located on the outlet port of the same.



MC SERIES

START UP AND OPERATIONAL CHECKS

Following the copper inlet tube the incoming water arrive on the upper side of the evaporator….

.... where it flows onto the plastic evaporator platen dribbling down through the holes located on the opposite side.

MC SERIES

START UP AND OPERATIONAL CHECKS

Dribbled water is collected down into the water sump where is located the overflow stand pipe that assures the proper water level and quantity for the next freezing cycle.

MC SERIES

START UP AND OPERATIONAL CHECKS

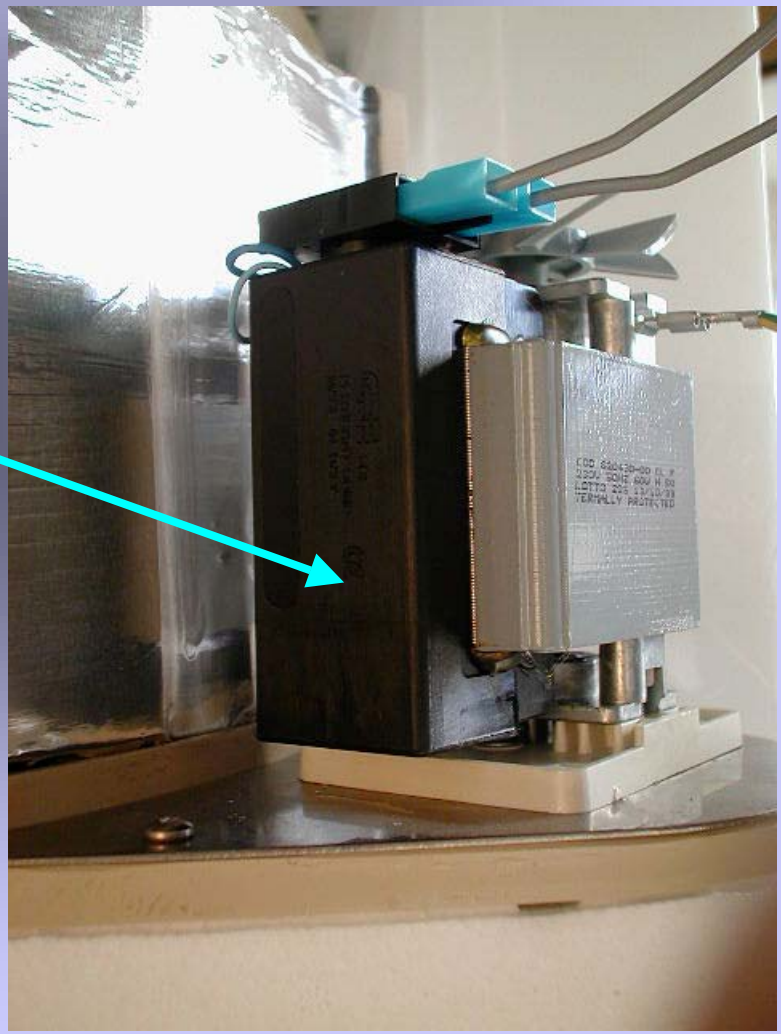
After the first 5’ of water filling phase the machine start up automatically on freezing cycle with the following electrical components in operation:

- Compressor

MC SERIES

START UP AND OPERATIONAL CHECKS

- Compressor
- Water Pump



MC SERIES

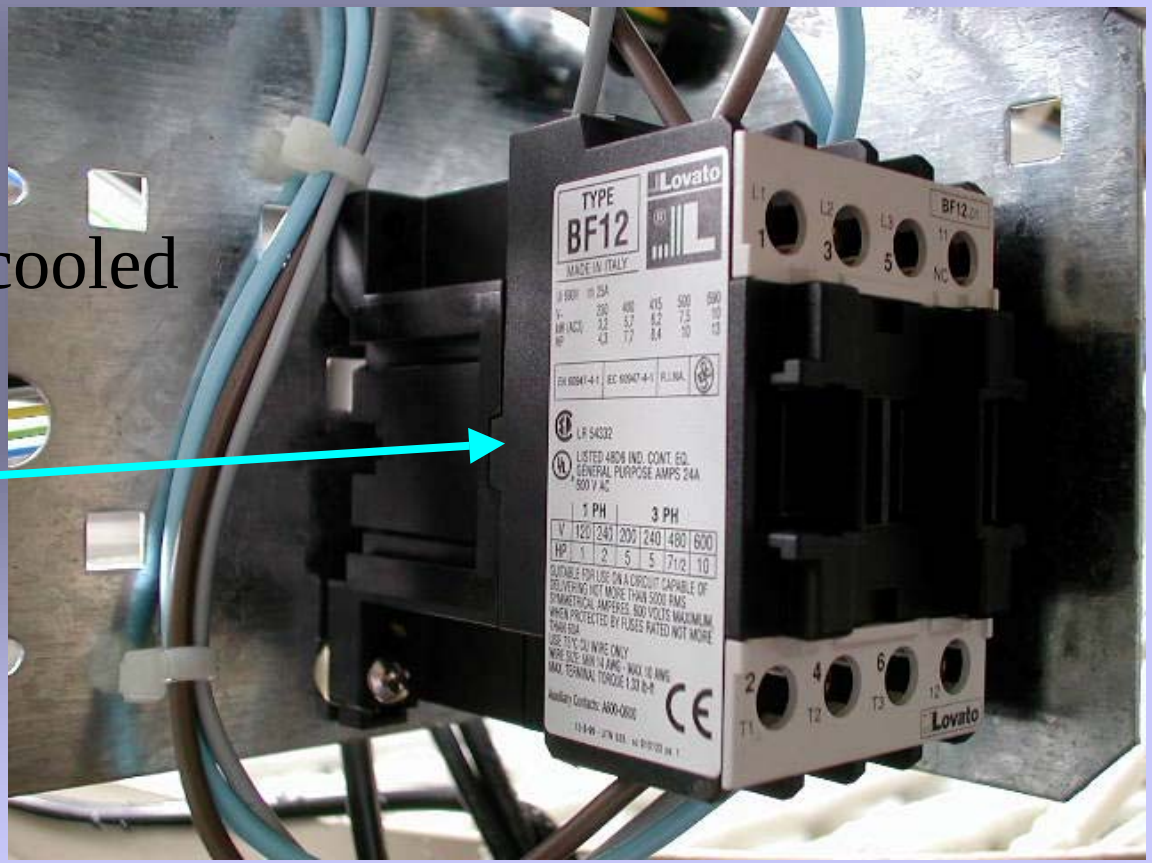
START UP AND OPERATIONAL CHECKS

- Compressor
- Water Pump
- Fan Motor (on air cooled version only)

MC SERIES

START UP AND OPERATIONAL CHECKS

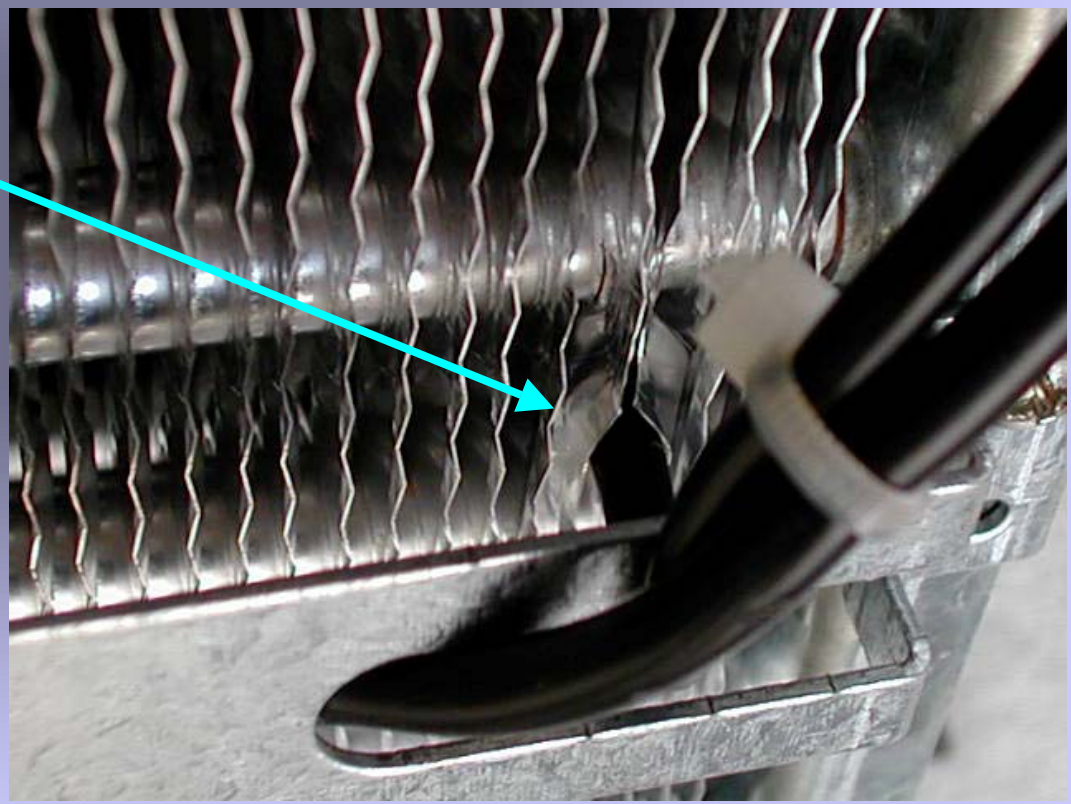
- Compressor
- Water Pump
- Fan Motor (on air cooled version only)
- Contactor



MC SERIES

START UP AND OPERATIONAL CHECKS

The operation of the fan motor is controlled by a condenser temperature sensor located within the fins of condenser that transmit a signal to the PC Board to activate in **ON-OFF mode** the fan motor so to keep between two pre-set values the condenser temperature and pressure.

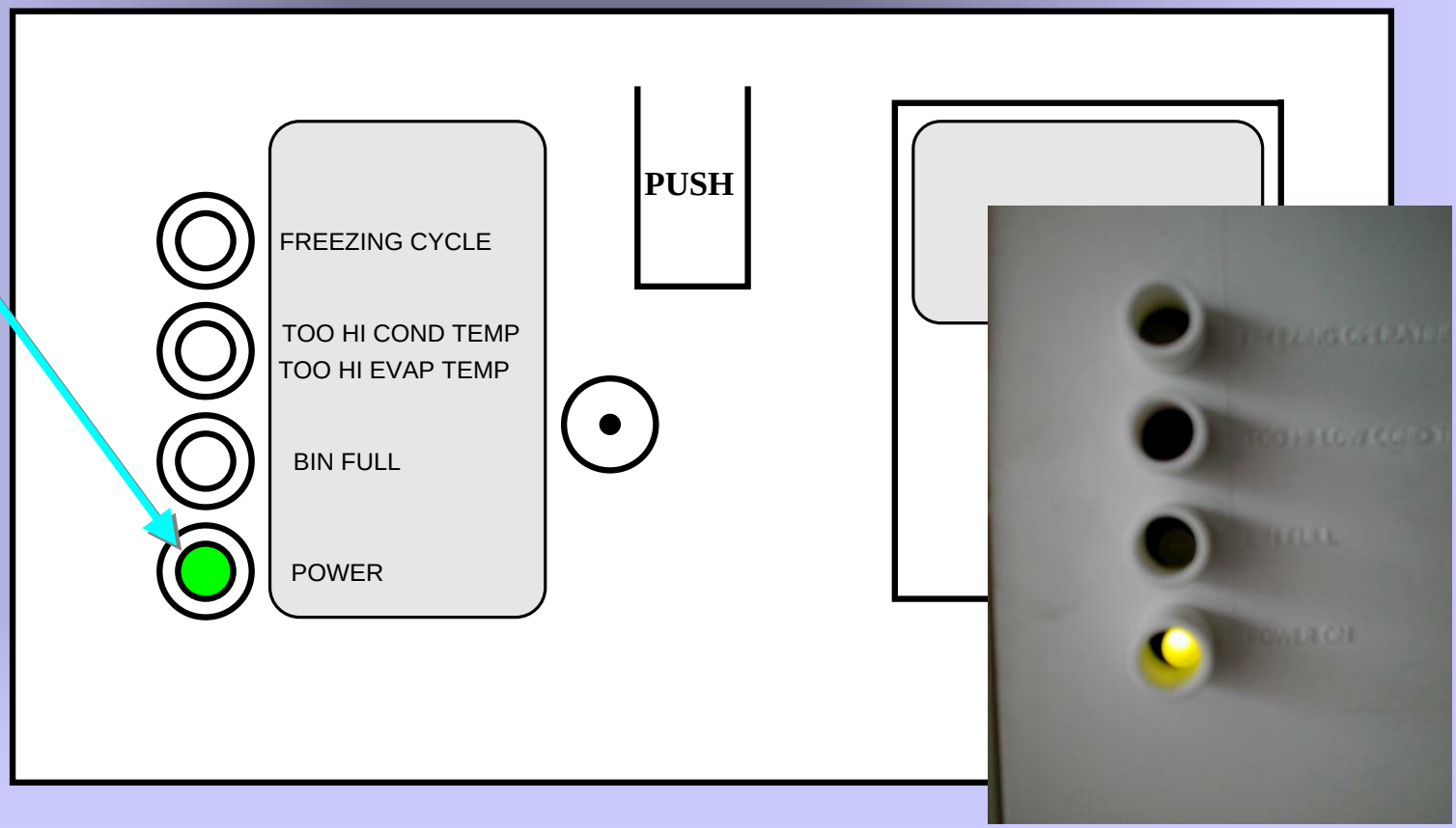


MC SERIES

START UP AND OPERATIONAL CHECKS

On PC Board the LED energized are:

- Power

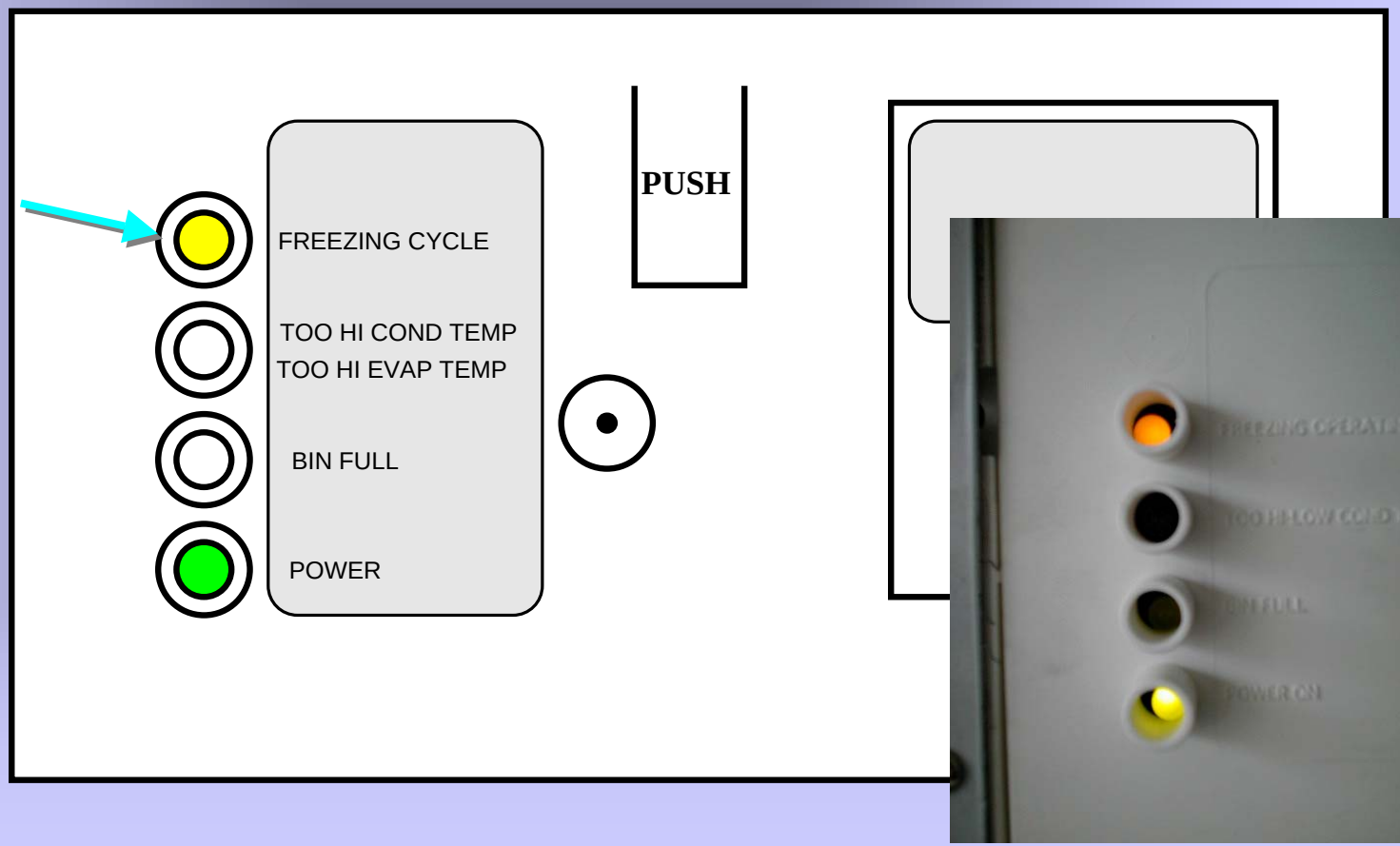


MC SERIES

START UP AND OPERATIONAL CHECKS

On PC Board the LED energized are:

- Power
- Freezing



MC SERIES

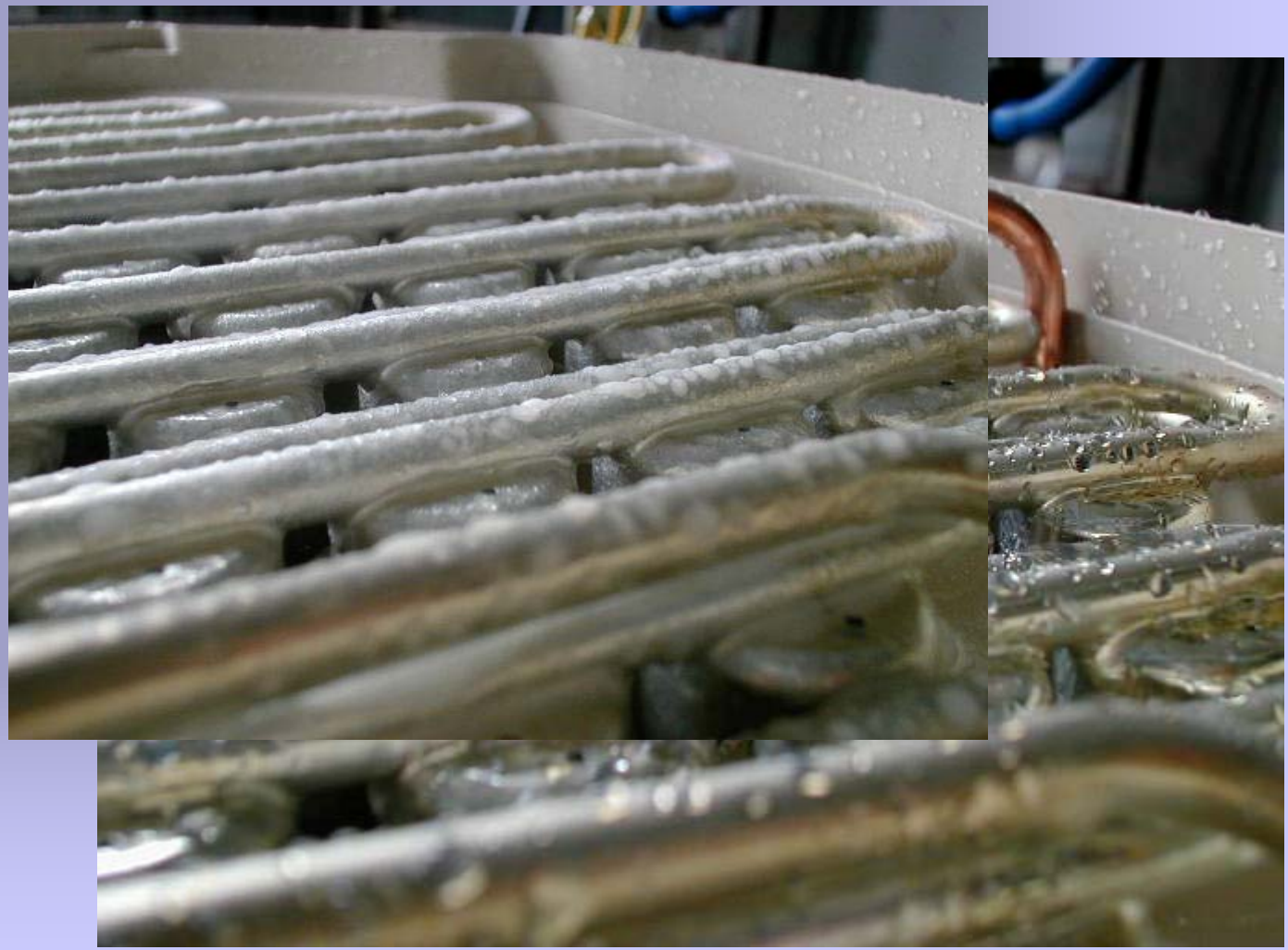
START UP AND OPERATIONAL CHECKS

Water is circulating by the water pump into the inverted tin plated copper molds of the evaporator….

MC SERIES

START UP AND OPERATIONAL CHECKS

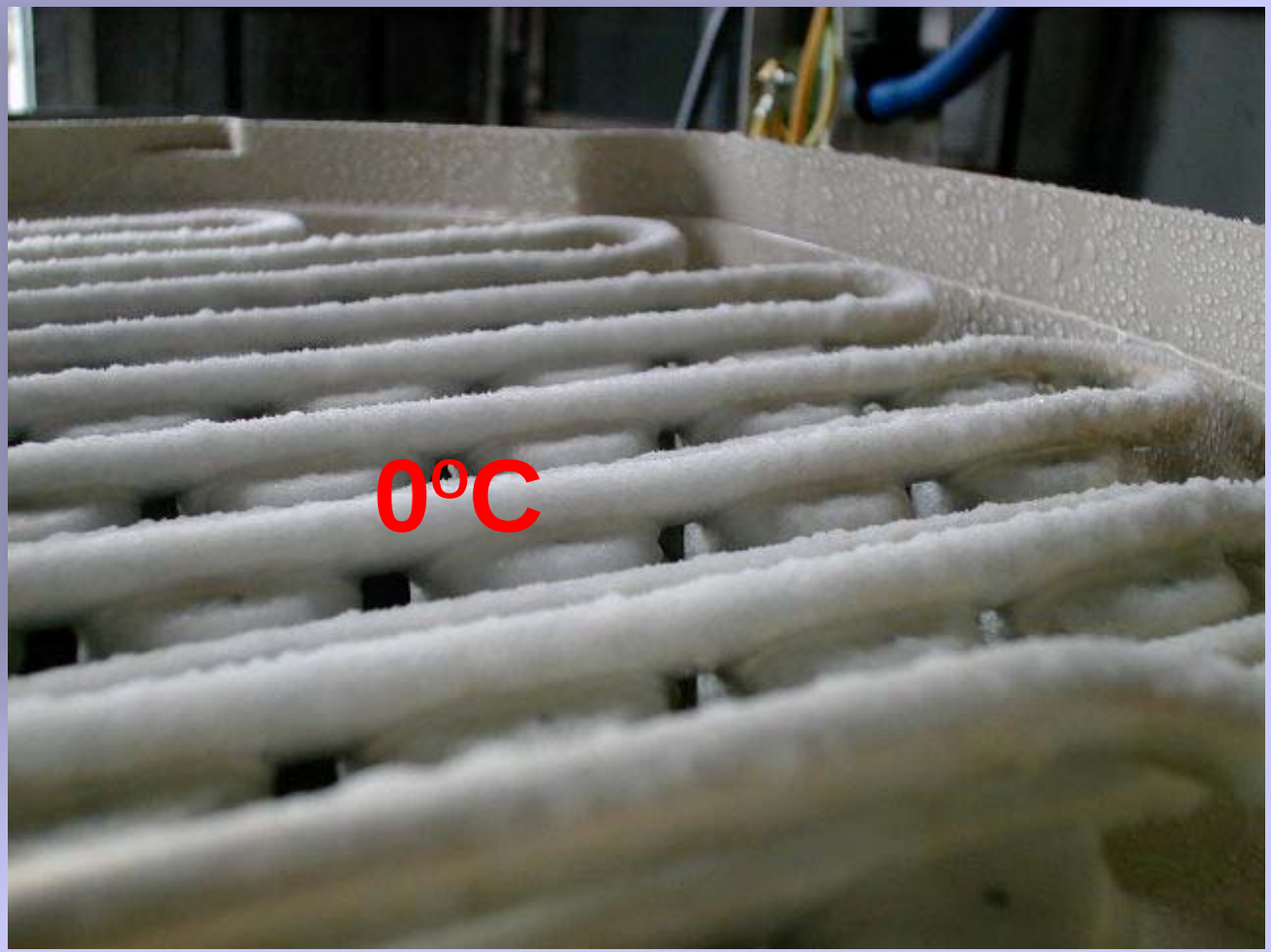
….while the refrigerant is flowing into the serpentine welded on the upper side of the tin plated copper molds.



MC SERIES

START UP AND OPERATIONAL CHECKS

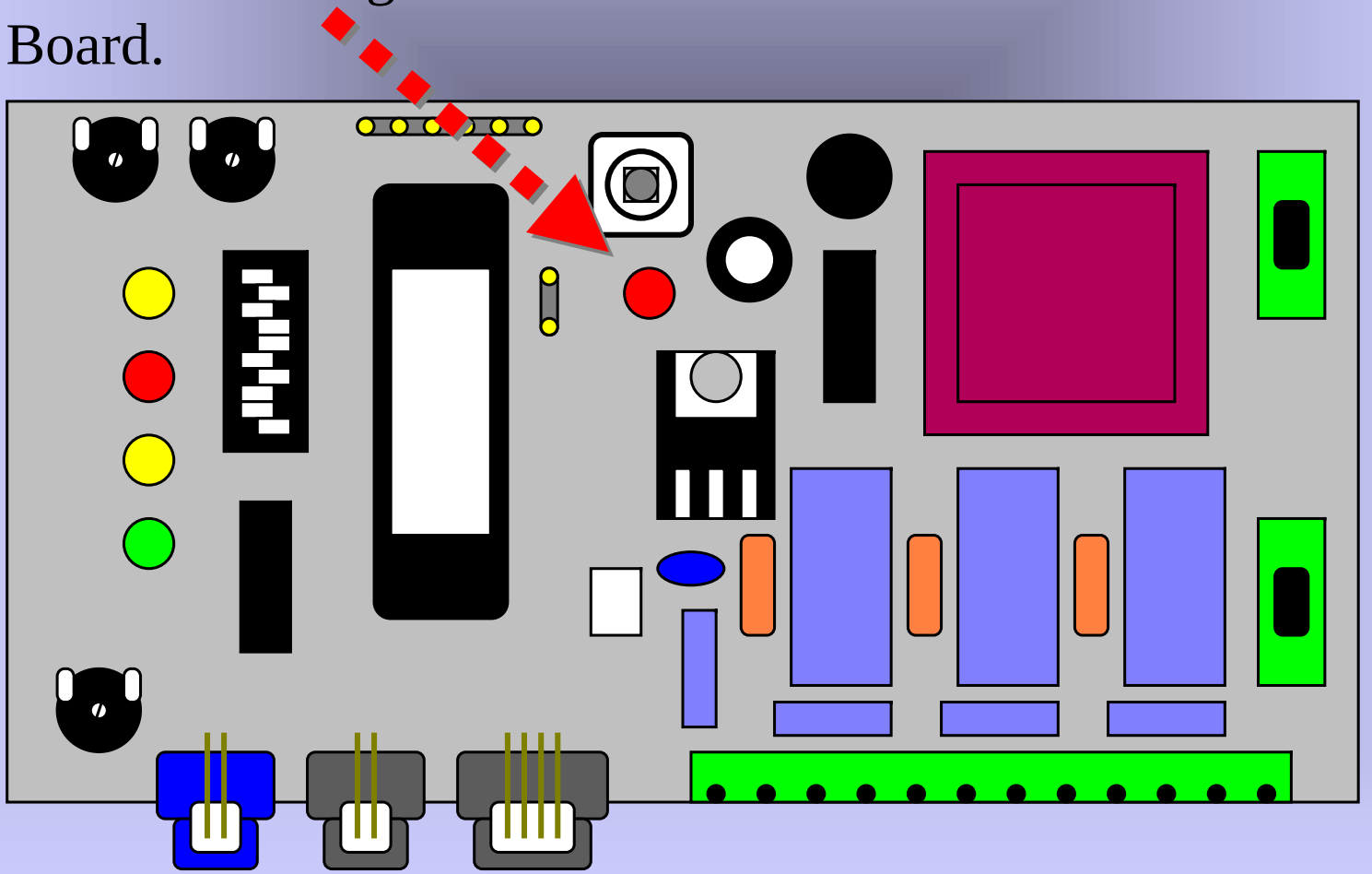
After approximately 5 minutes after the start up of the freezing cycle, the temperature of the evaporator serpentine drops down to 0ºC….



MC SERIES

START UP AND OPERATIONAL CHECKS

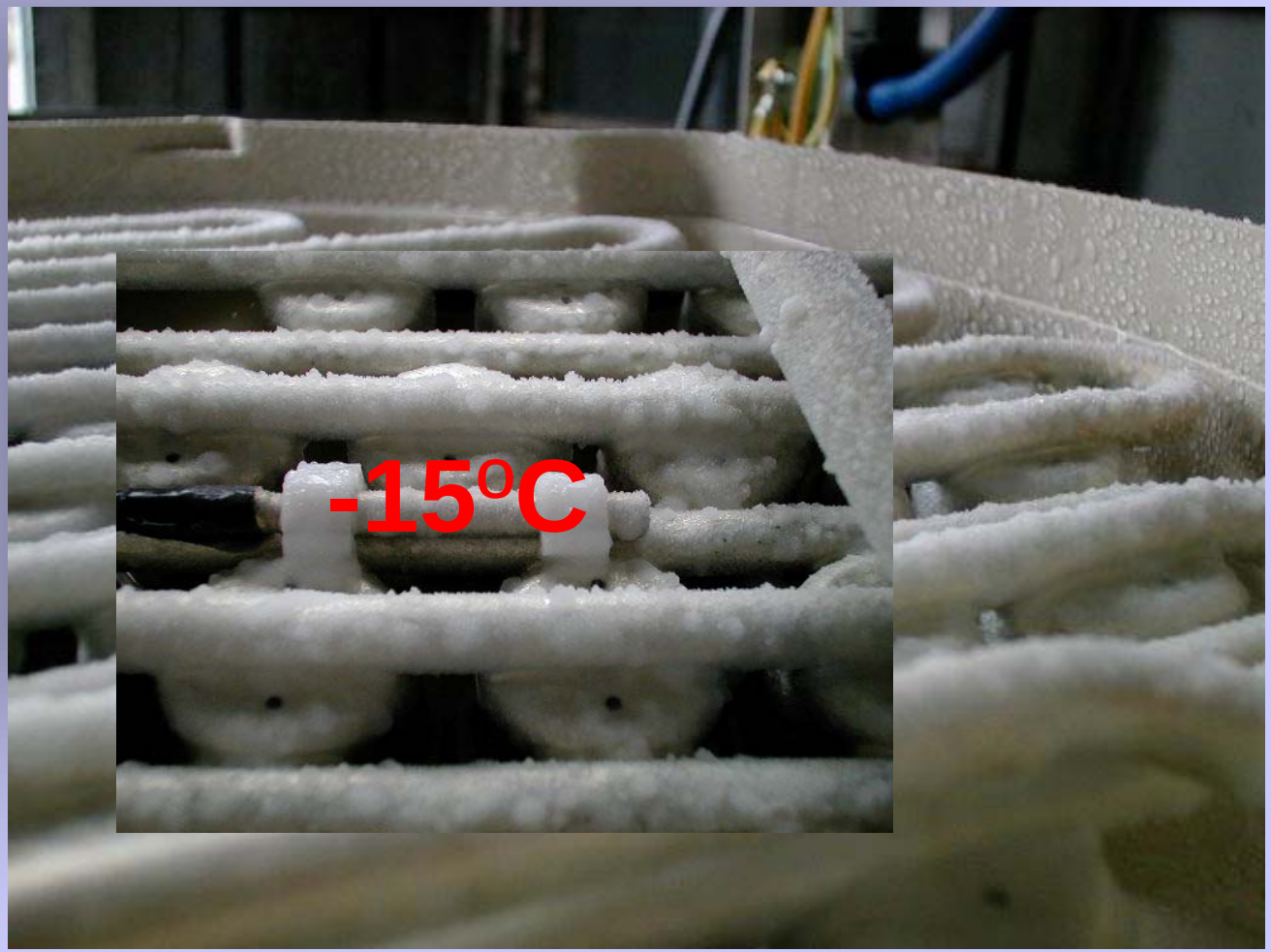
….with the blinking of the small RED LED located in the center of PC Board.



MC SERIES

START UP AND OPERATIONAL CHECKS

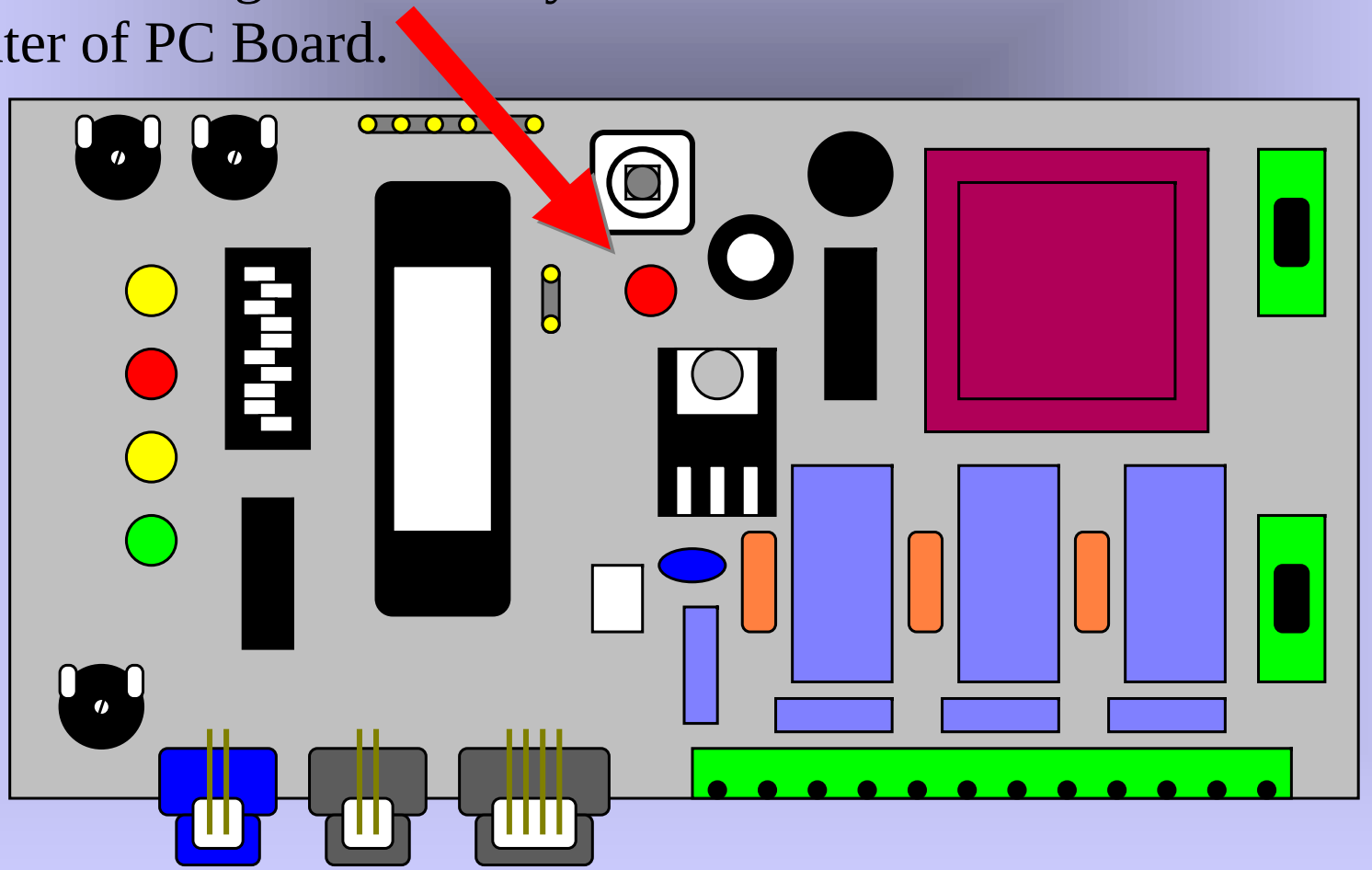
Approximately 5 minutes the temperature of the evaporator serpentine drops down to - 15ºC….



MC SERIES

START UP AND OPERATIONAL CHECKS

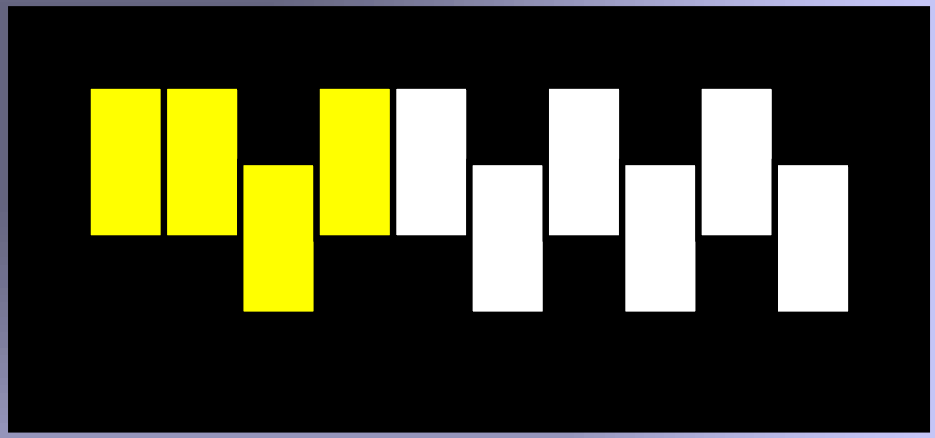
….with the light ON steady of the small RED LED located in the center of PC Board.



MC SERIES

START UP AND OPERATIONAL CHECKS

The machine remains in the freezing cycle till its completion for an additional time according to the set up of the first four DIP SWITCH of the PC Board.



MC SERIES

START UP AND OPERATIONAL CHECKS

Once completed the freezing cycle the machine enters into the defrost or harvest cycle with the following electrical components in operation:

- Compressor

MC SERIES

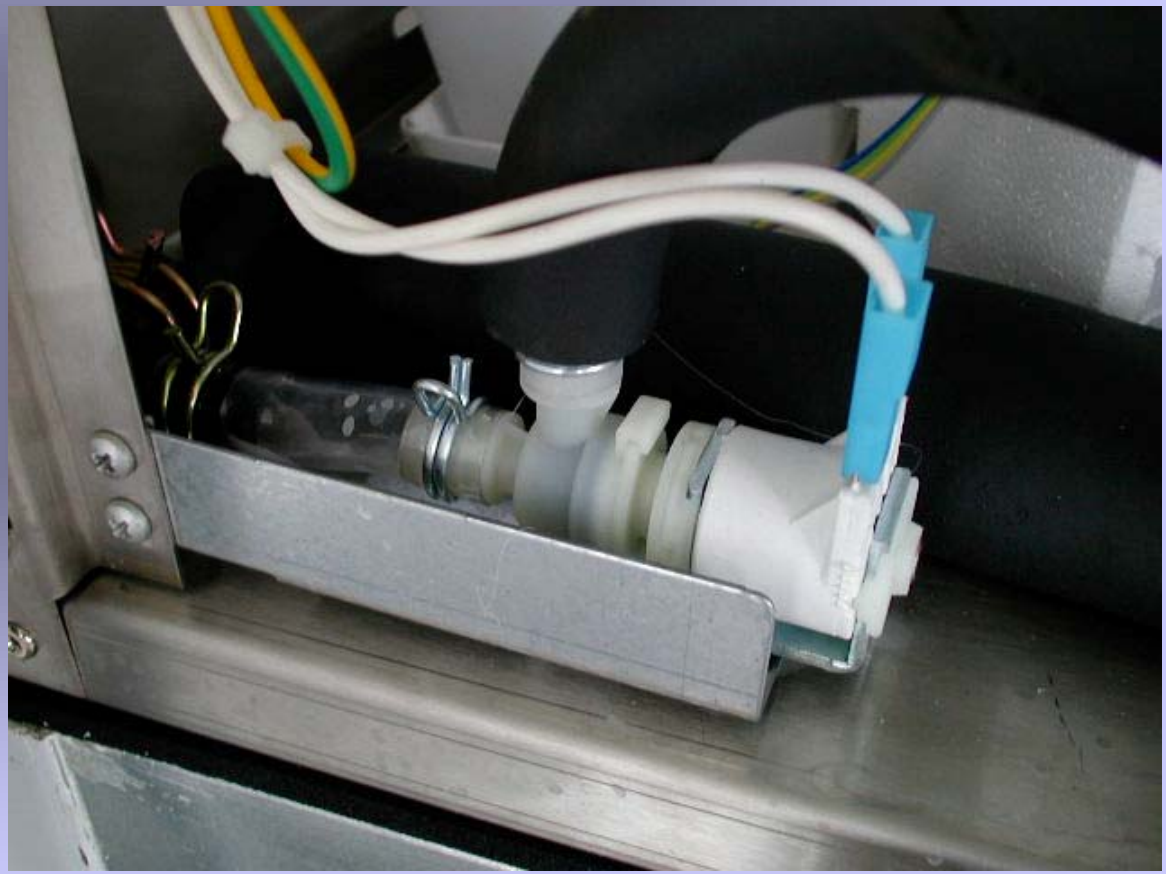
START UP AND OPERATIONAL CHECKS

- Compressor
- Water Inlet Solenoid valve

MC SERIES

START UP AND OPERATIONAL CHECKS

- Compressor
- Water Inlet Solenoid valve
- Water Drain/Purge Solenoid Valve



MC SERIES

START UP AND OPERATIONAL CHECKS

- Compressor
- Water Inlet Solenoid valve
- Water Drain/Purge Solenoid Valve
- Hot Gas Valve

MC SERIES

START UP AND OPERATIONAL CHECKS

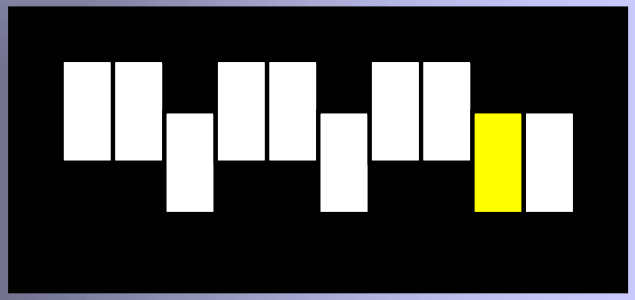
According to the setting of the DIP SWITCH no 9 the Water Pump can remain in operation to discharge the water not used on the previous freezing cycle during the first....

MC SERIES

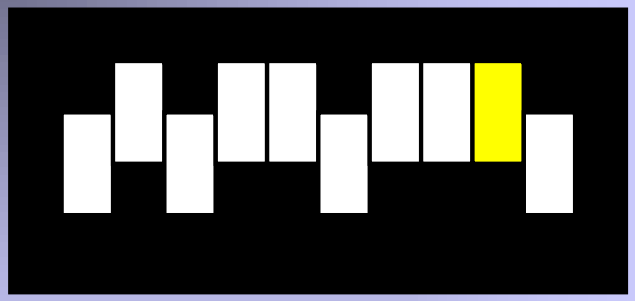
START UP AND OPERATIONAL CHECKS

….15” of the harvest cycle when the DIP SWITCH is in OFF position or 30” when in ON position.

OFF = 15 seconds



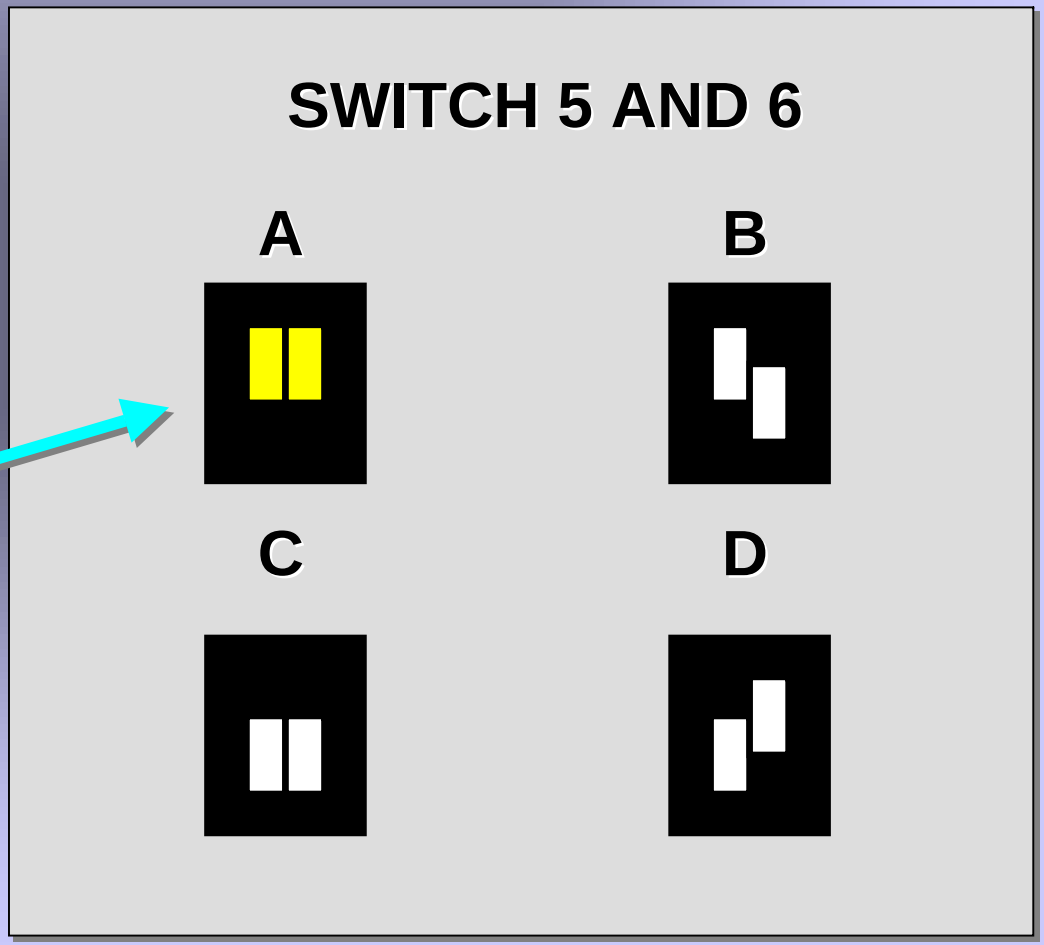
ON = 30 seconds



MC SERIES

START UP AND OPERATIONAL CHECKS

The length of the defrost or harvest cycle is controlled by the PC Board according to the setting of the DIP SWITCH 5 and 6 and it is related to …..



MC SERIES

START UP AND OPERATIONAL CHECKS

…..the time that the machine takes to drop the evaporating temperature from 0ºC to -15ºC (**time T_2**) as shown on the table.

LENGTH OF HARVEST CYCLE ACCORDING TO THE TIME TO DROP THE EVAP. TEMPERATURE FROM 0ºC TO -13ºC

LENGTH HARVEST CYCLE	PROGRAMS			
	A	B	C	D
180”	Up to 6’	***	Up to 9’	***
165”	6’-7’	Up to 3’	9’-10’	***
150”	7’-8’	3’-3’15’	10’-11’	***
135”	8’-9’	3’15”-3’30”	11’-12’	***
120”	9’-10’	3’30”-4’30”	12’-13’	Up to 3’
105”	10’-12’	430”-6’	13’-15’	3-4’
90”	>12’	>6’	>15’	>4’

MC SERIES

START UP AND OPERATIONAL CHECKS

It’s possible to extend the length of the defrost cycle by means of the DIP SWITCH 7 and 8 as per below chart.

DIP SWITCH		ADDITIONAL DEFROST TIME
7	**8**	
ON	ON	0
OFF	ON	30"
ON	OFF	60"
OFF	OFF	90"

MC SERIES

START UP AND OPERATIONAL CHECKS

During the defrost or harvest cycle the combined action of refrigerant in Hot Gas state and incoming Water are going to partially melt the ice cubes in contact with the tin plated copper molts with the dropping down of the same through the curtain.

MC SERIES

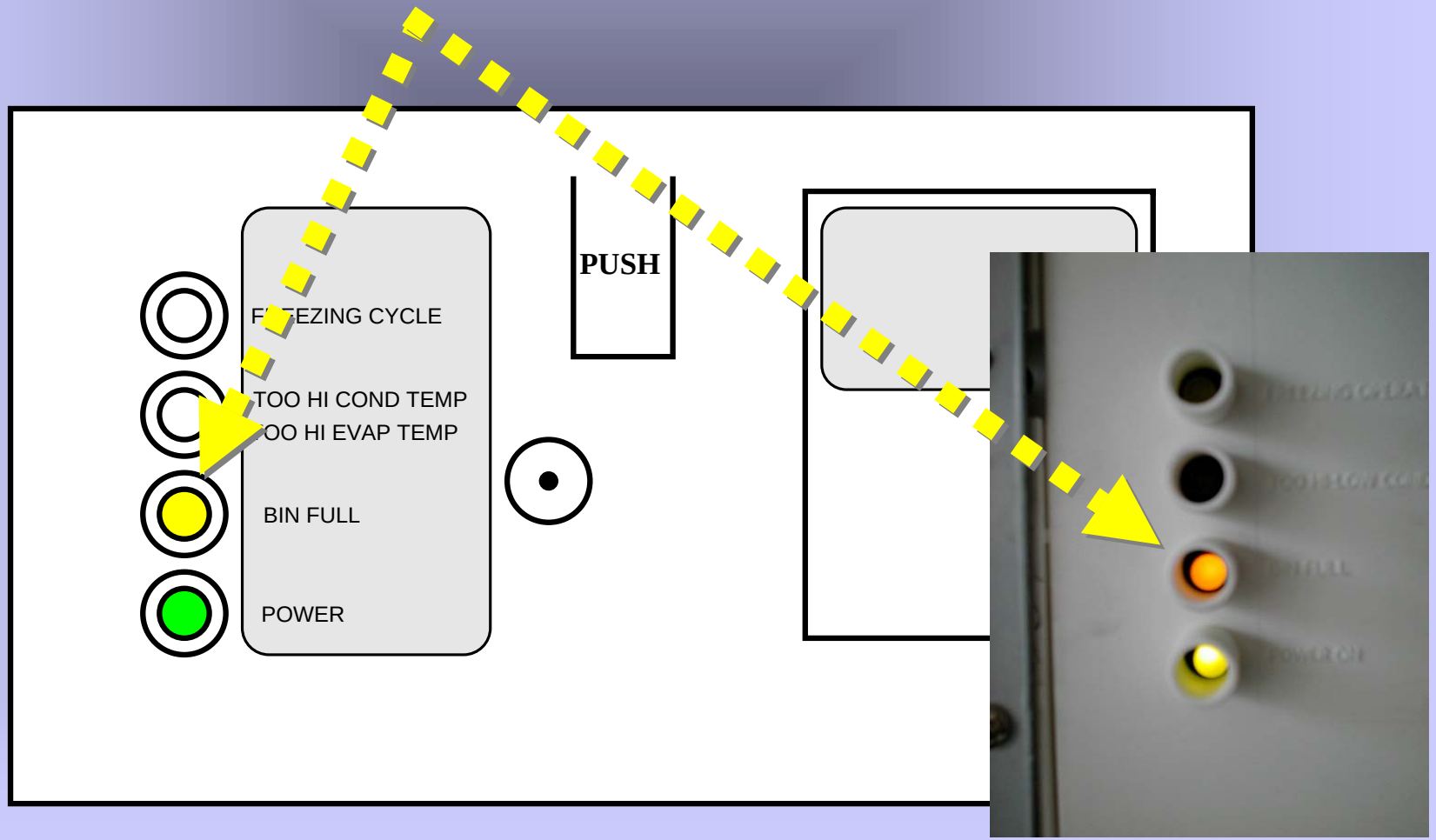
START UP AND OPERATIONAL CHECKS

Holding an hand full of ice cubes between the I/R Optical Ice Level Sensor during the defrost cycle it is possible to test its operation.

MC SERIES

START UP AND OPERATIONAL CHECKS

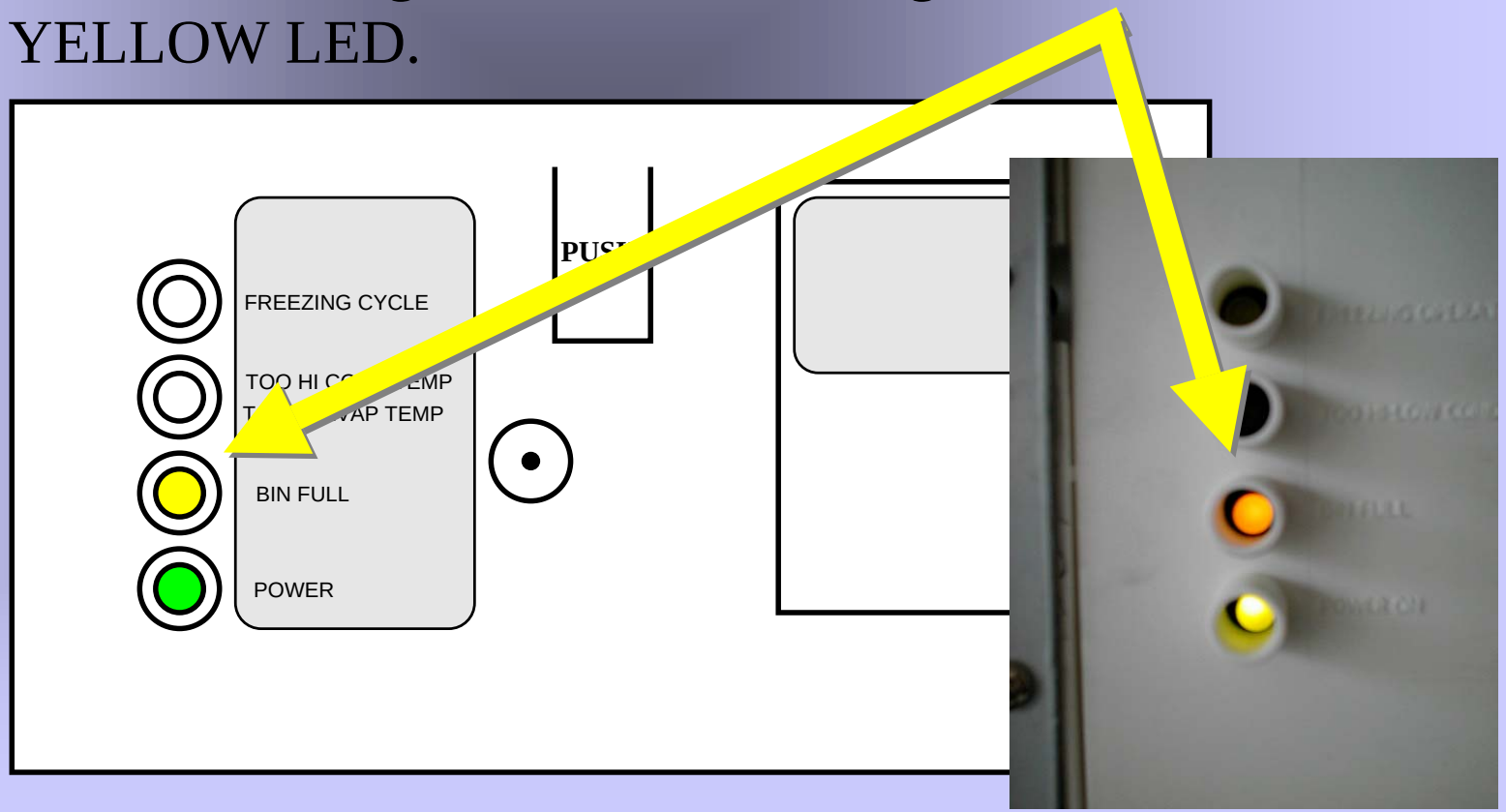
The Bin Full YELLOW LED starts to blink.



MC SERIES

START UP AND OPERATIONAL CHECKS

After 1 minute of continuous interruption of the infrared beam between transmitter and received (Bin Full YELLOW LED always blinking) the machine switch off at storage bin full with the light ON STEADY of BIN FULL YELLOW LED.

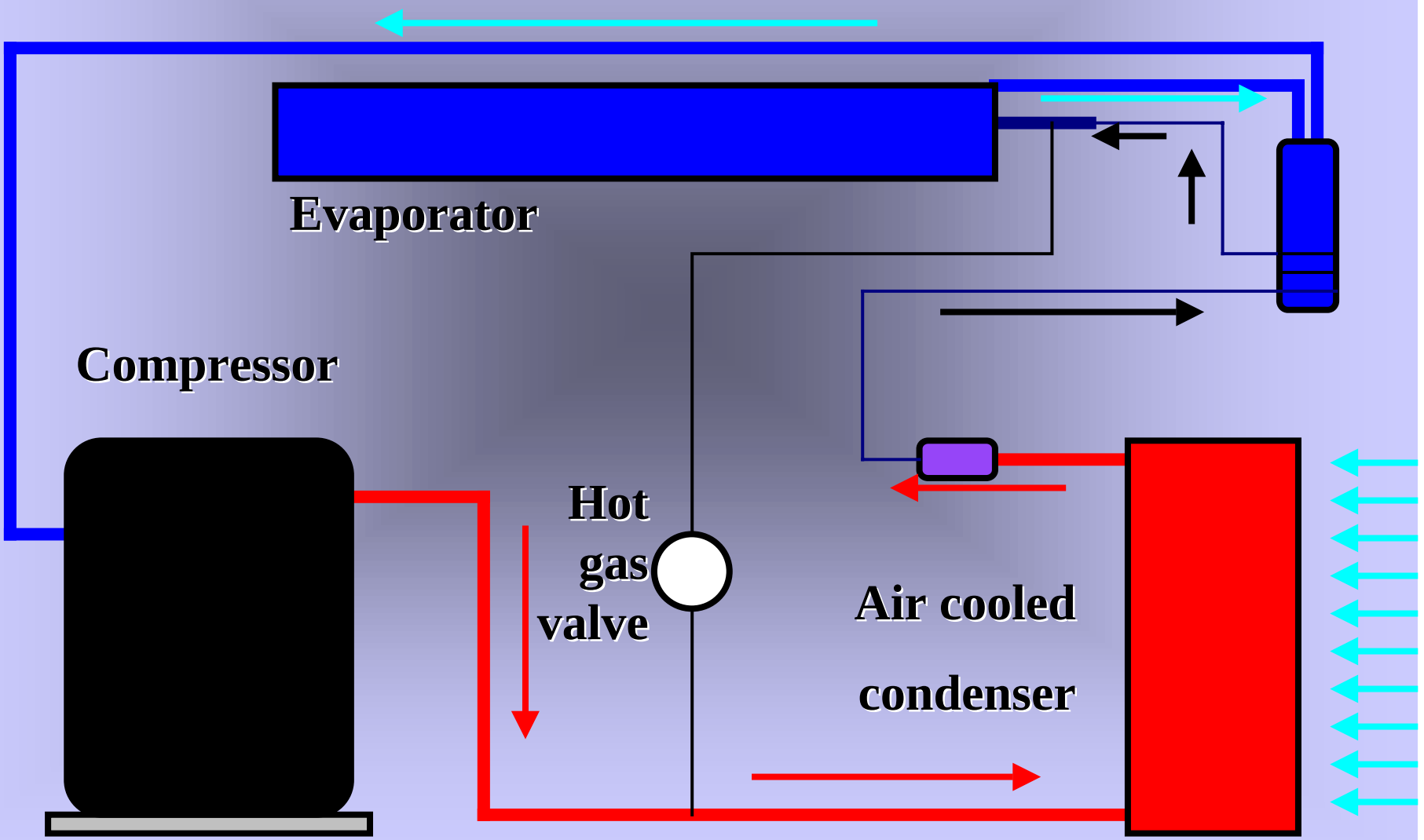


MC SERIES

OPERATING PRINCIPLES and COMPONENTS

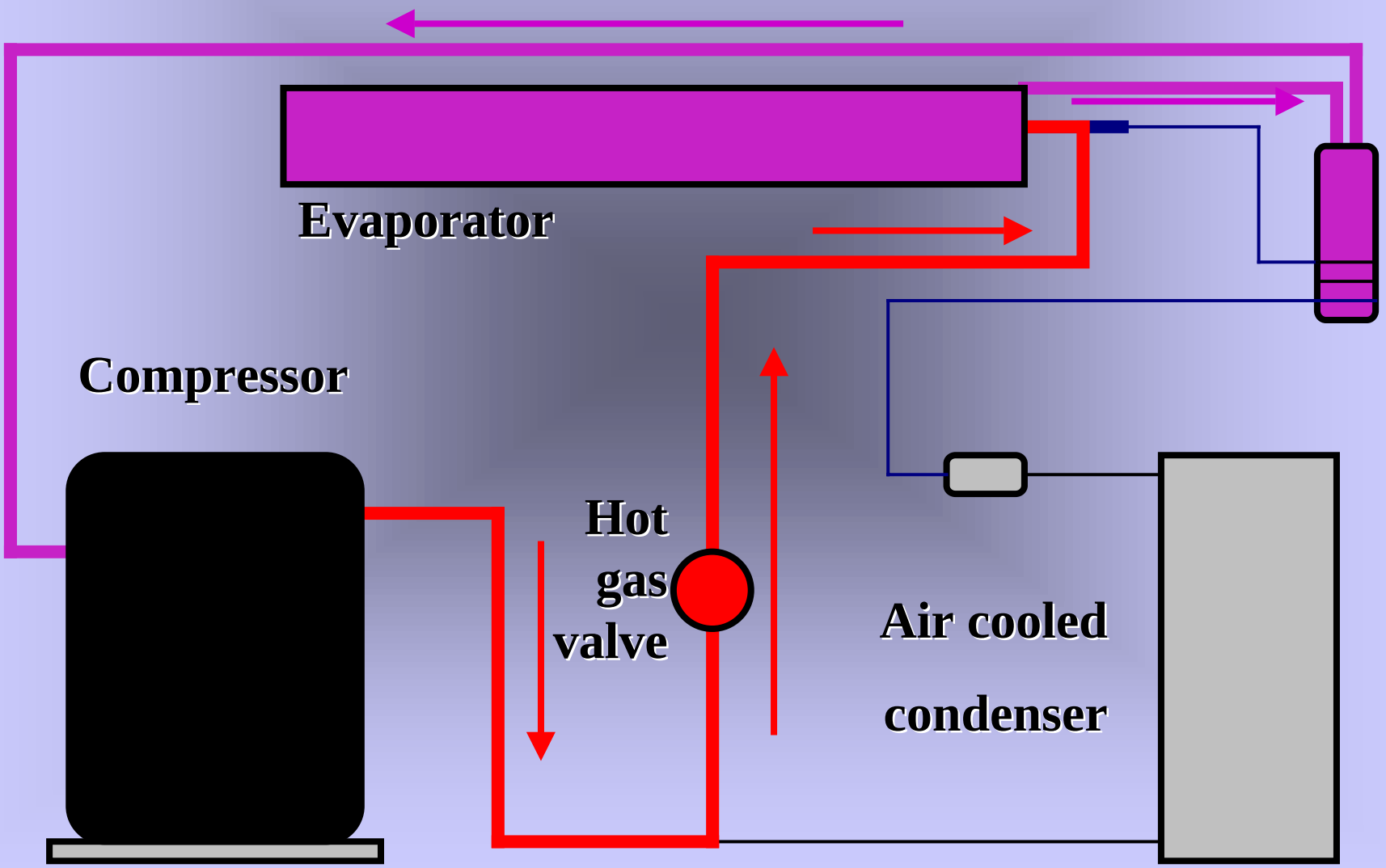
MC SERIES

OPERATING PRINCIPLES - FREEZE



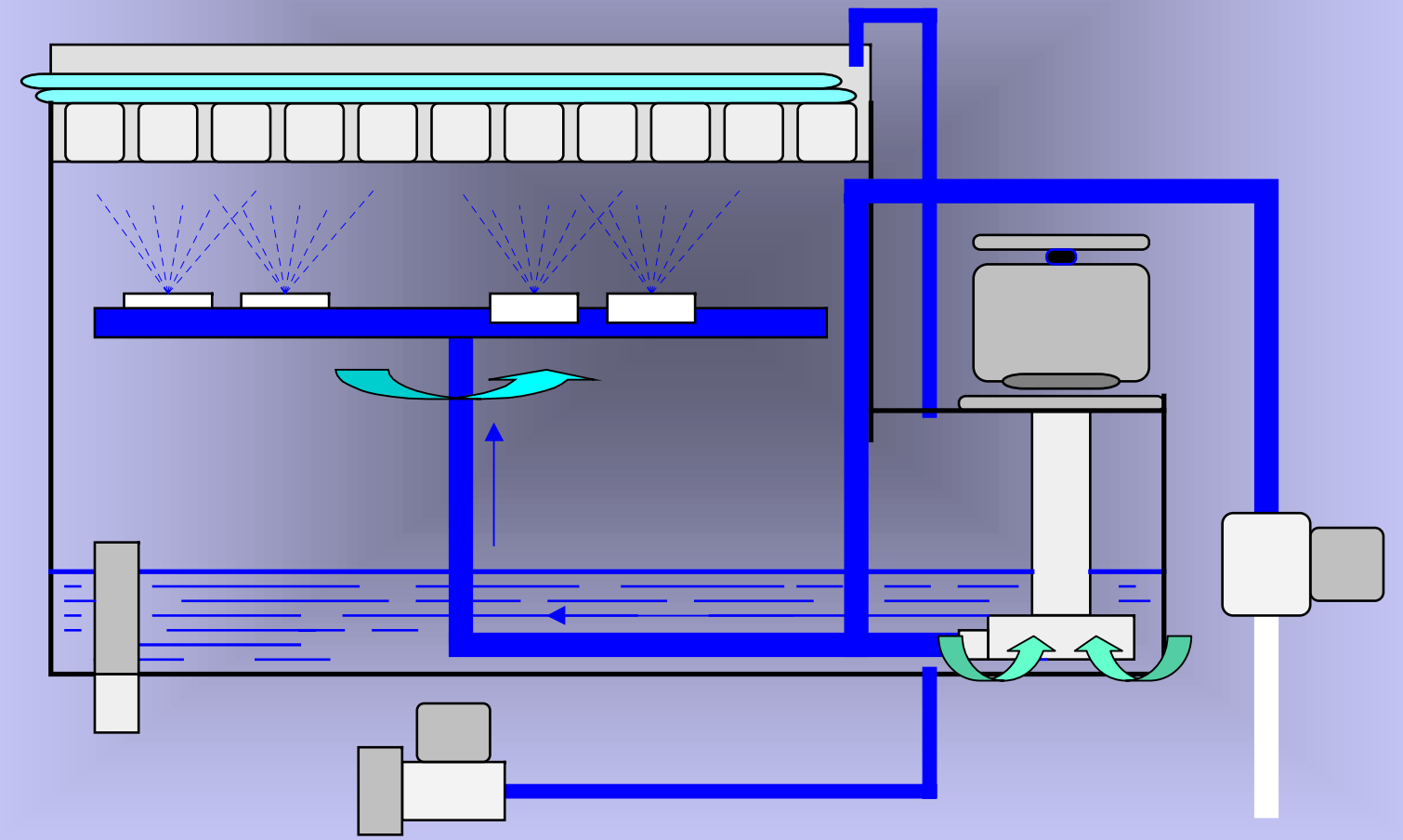
MC SERIES

OPERATING PRINCIPLES - HARVEST



MC SERIES

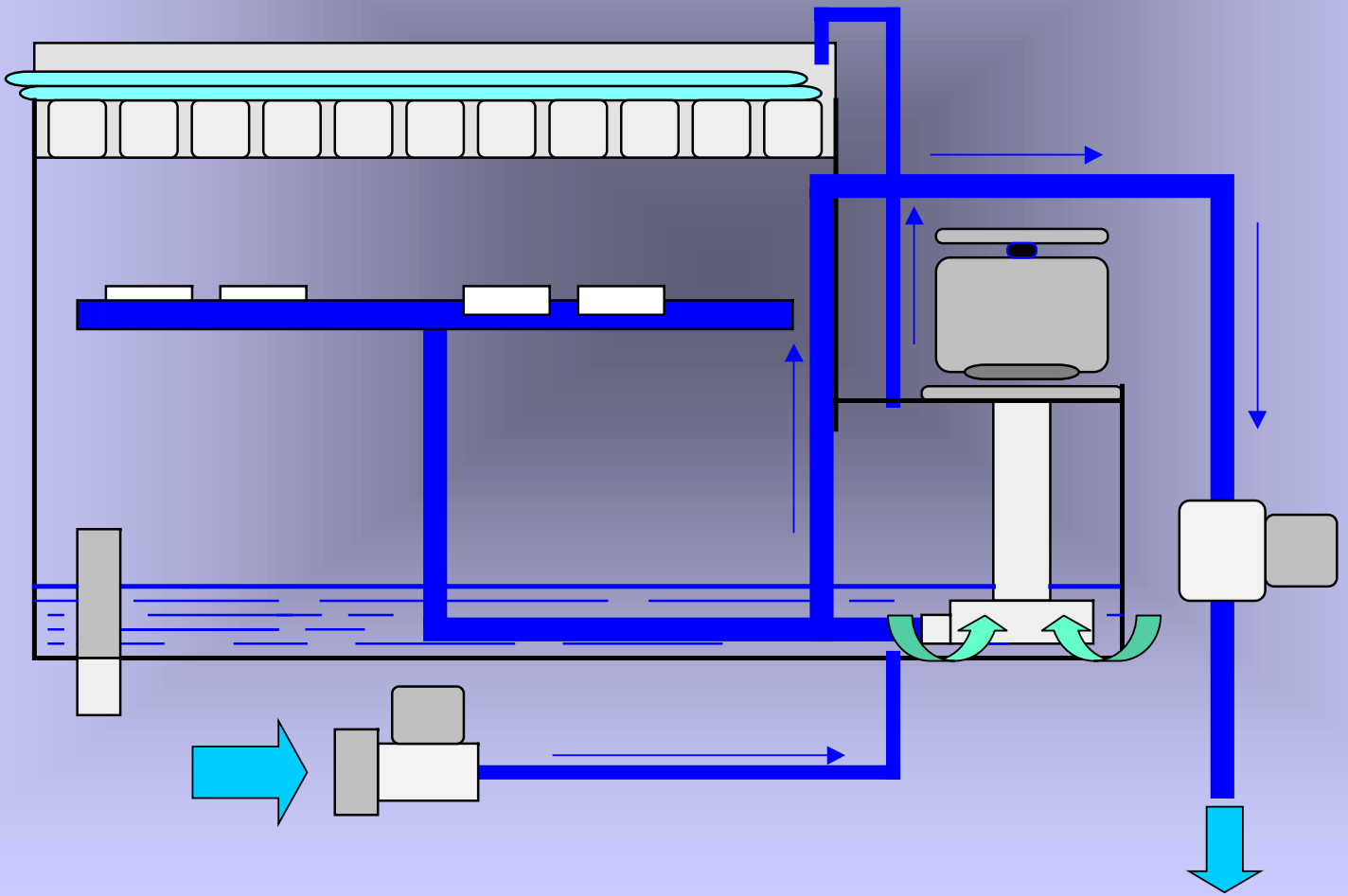
WATER SYSTEM - FREEZE



MC SERIES

WATER SYSTEM - HARVEST

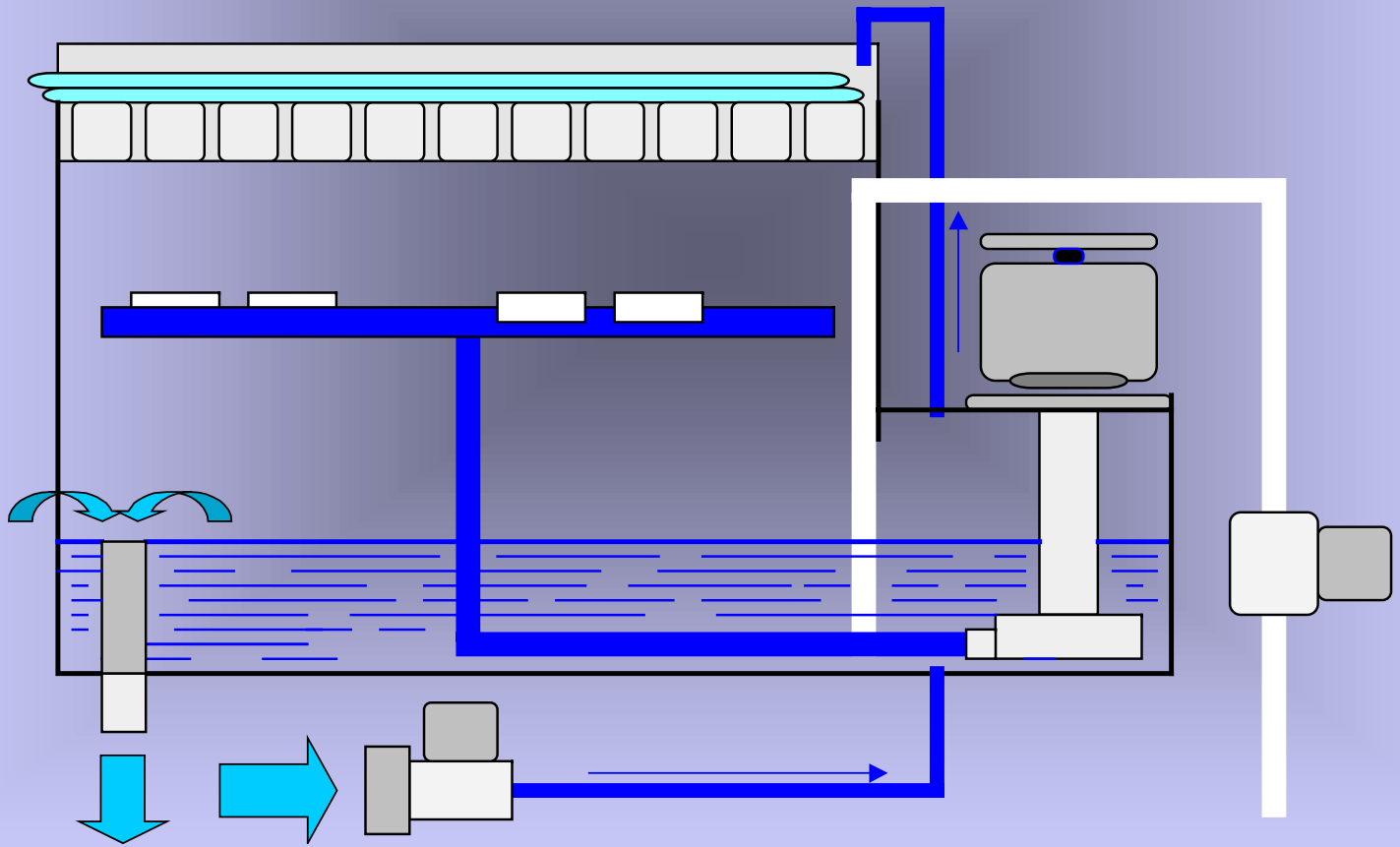
FIRST PORTION 30”



MC SERIES

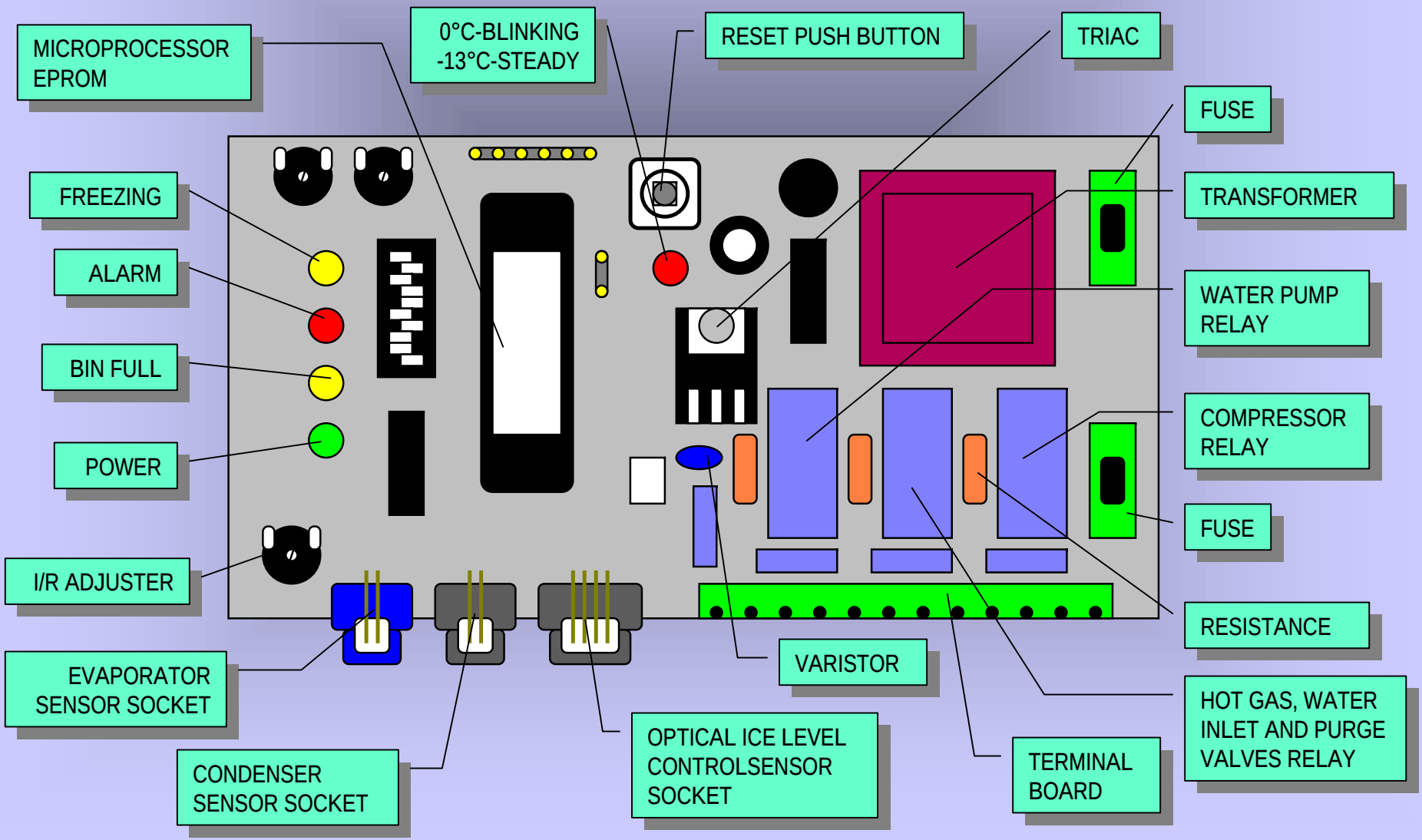
WATER SYSTEM - HARVEST

SECOND PORTION



MC SERIES

OPERATING PRINCIPLES - PC BOARD



MC SERIES

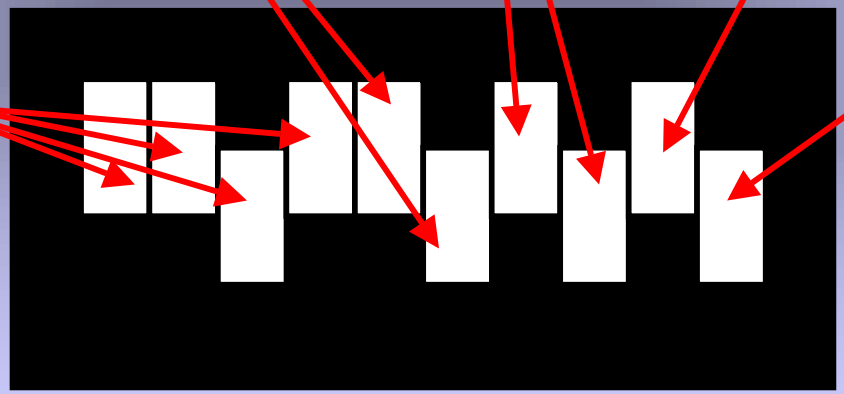
OPERATING PRINCIPLES - PC BOARD

SWITCH 5 AND 6 LENGTH OF THE HARVEST CYCLE ACCORDING TO THE TIME T_2

SWITCH 7 AND 8 EXTENTION TIME OF HARVEST CYCLE BY 0", 30", 60" OR 90"

SWITCH 9 OPERATING TIME OF WATER PUMP DURING HARVEST OFF = 15" ON = 30"

SWITCH 1, 2, 3 AND 4 SETTING OF THE TIMED PORTION OF FREEZING CYCLE



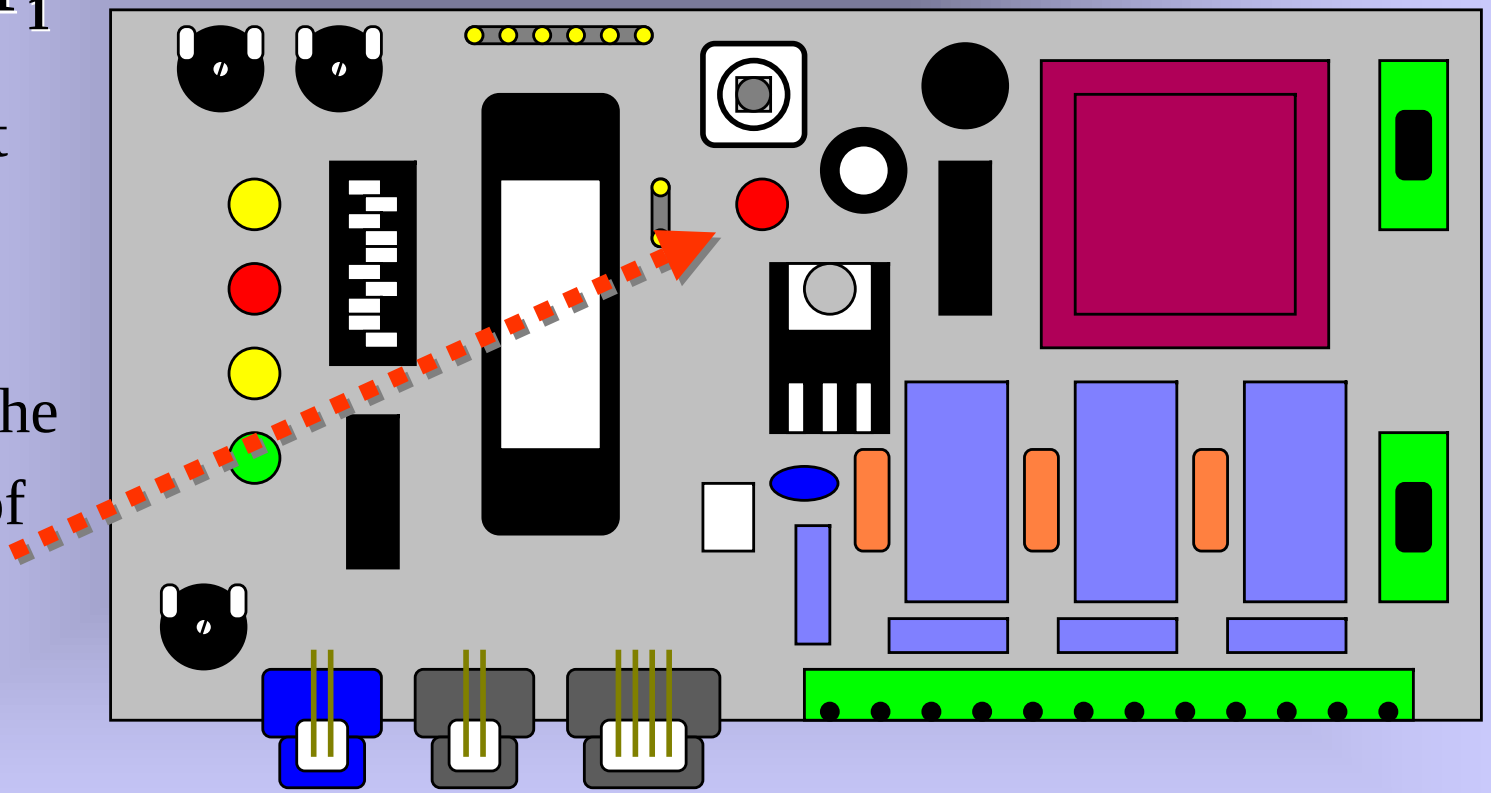
SWITCH 10 CONDENSER SAFETY CUT OUT TEMPERATURE (60ºC WATER - OFF AND 70ºC AIR - ON)

MC SERIES

OPERATING PRINCIPLES - PC BOARD

Time T_1

From start up of freezing cycle till the blinking of 0°C Red LED

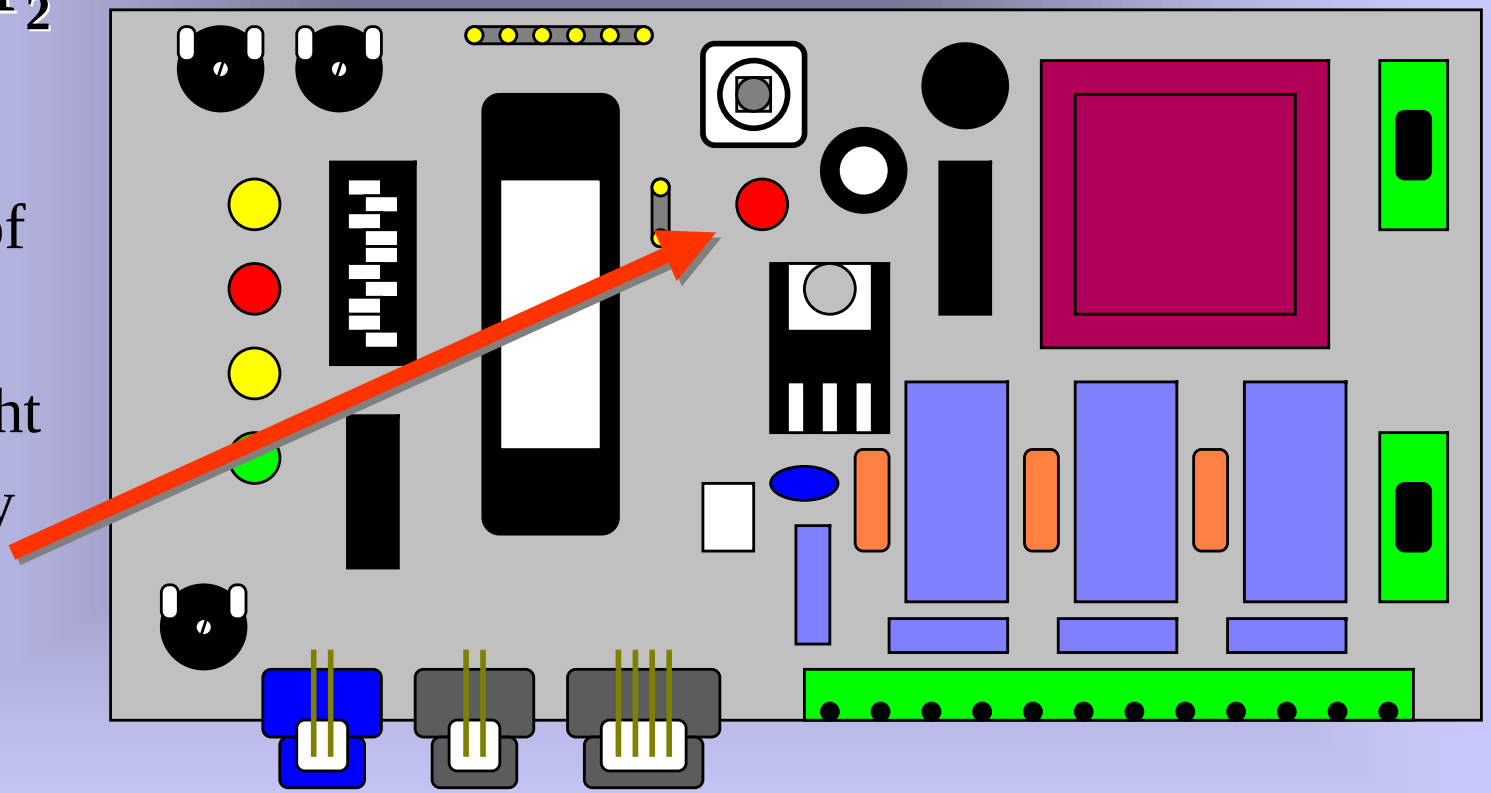


MC SERIES

OPERATING PRINCIPLES - PC BOARD

Time T_2

From blinking of Red LED till the light ON steady of -15°C Red LED

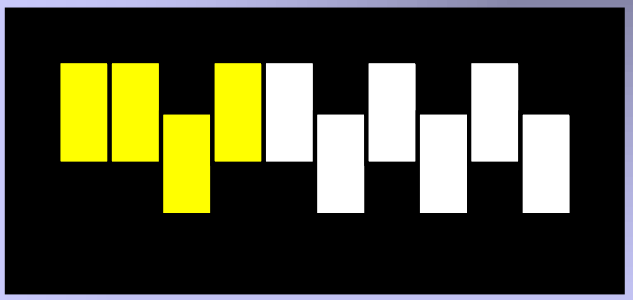


MC SERIES

OPERATING PRINCIPLES - PC BOARD

Time T_a

Added time controlled by the PC Board according to the setting of the DIP SWITCH 1, 2, 3 and 4.



LENGTH OF TIMED PORTION OF FREEZING CYCLE – FIRST 4 SWITCHES

25’

23’

21’

19’

17’

15’

13’

11’

9’

7’

5’

3’

MC SERIES

OPERATING PRINCIPLES - PC BOARD

Time T_s

Harvest **Time T_S** is controlled by the PC Board and it is inversely proportional to the Time T_2 of the Freeze Cycle (from 0ºC to -13ºC) as per the **combination A** of the Table.

Time T_S is NOT adjustable.

LENGTH OF HARVEST CYCLE ACCORDING TO THE TIME TO DROP THE EVAP. TEMPERATURE FROM 0ºC TO -13ºC

LENGTH HARVEST CYCLE	PROGRAMS			
	A	B	C	D
180”	Up to 6’	***	Up to 9’	***
165”	6’-7’	Up to 3’	9’-10’	***
150”	7’-8’	3’-3’15’	10’-11’	***
135”	8’-9’	3’15”-3’30”	11’-12’	***
120”	9’-10’	3’30”-4’30”	12’-13’	Up to 3’
105”	10’-12’	430”-6’	13’-15’	3-4’
90”	>12’	>6’	>15’	>4’

MC SERIES

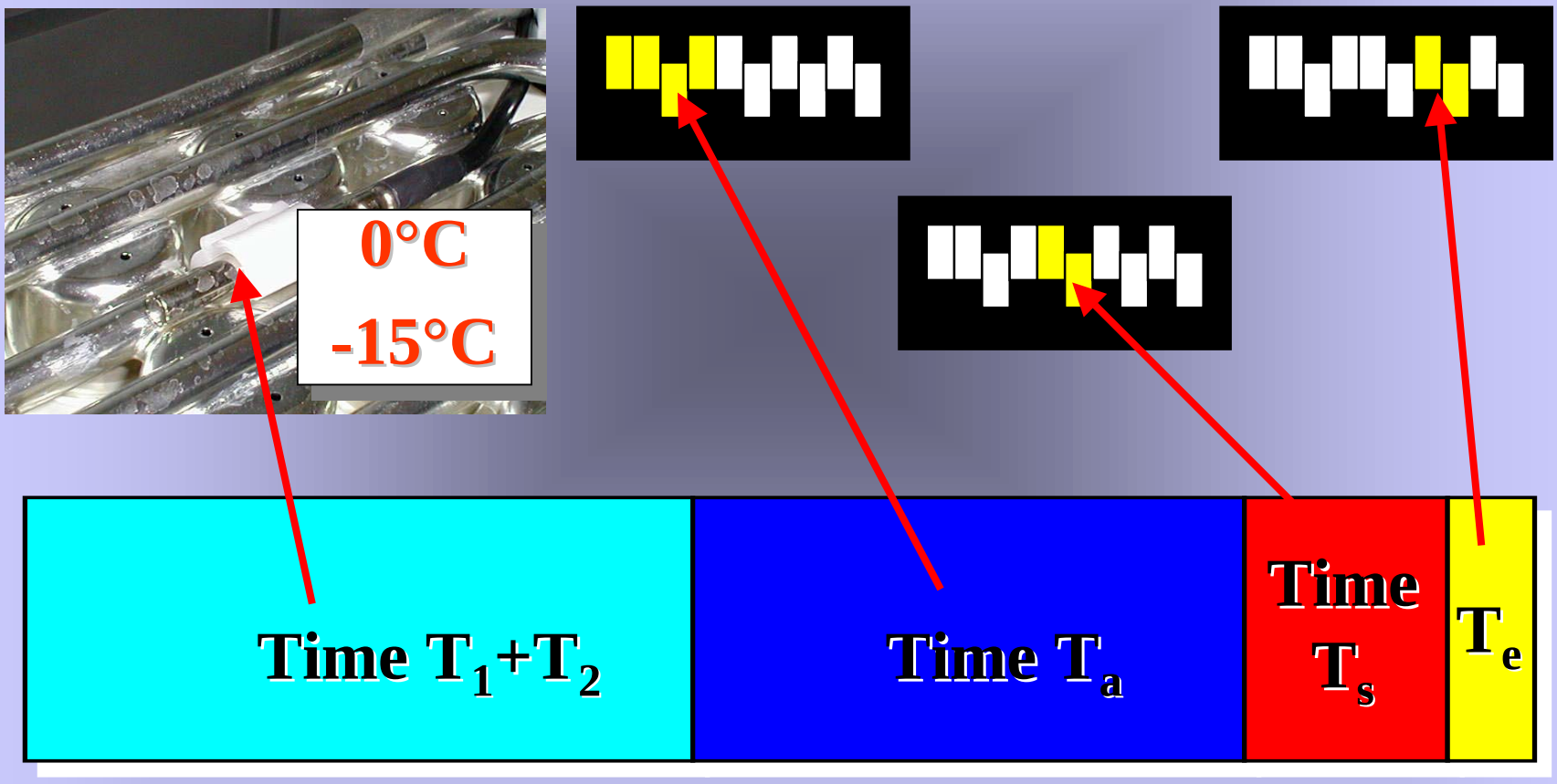
START UP AND OPERATIONAL CHECKS

It’s possible to **extend the length of the harvest cycle (T_e)** by means of the **DIP SWITCH 7 and 8** as per below chart.

DIP SWITCH		ADDITIONAL DEFROST TIME
7	**8**	
ON	ON	0
OFF	ON	30"
ON	OFF	60"
OFF	OFF	90"

MC SERIES

OPERATING PRINCIPLES - PC BOARD



Freezing = T_1 + T_2 + T_a

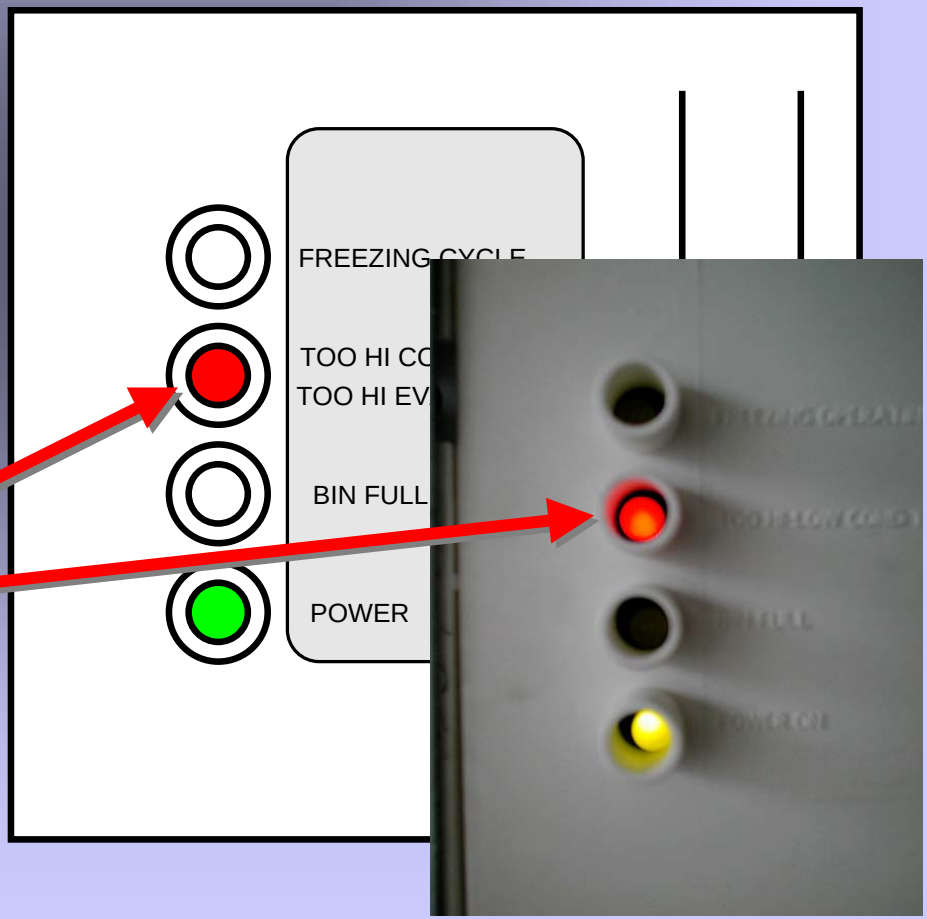
Defrost/Harvest = T_s + T_e

MC SERIES

OPERATING PRINCIPLES - ALARM

TOO HI COND. TEMPERATURE

Whenever the condensing temperature rise up to **70°C** (air cooled version) or **60°C** (water cooled version) the PC Board will switch OFF immediately the entire machine with the **light ON** of the **Red ALARM LED**.

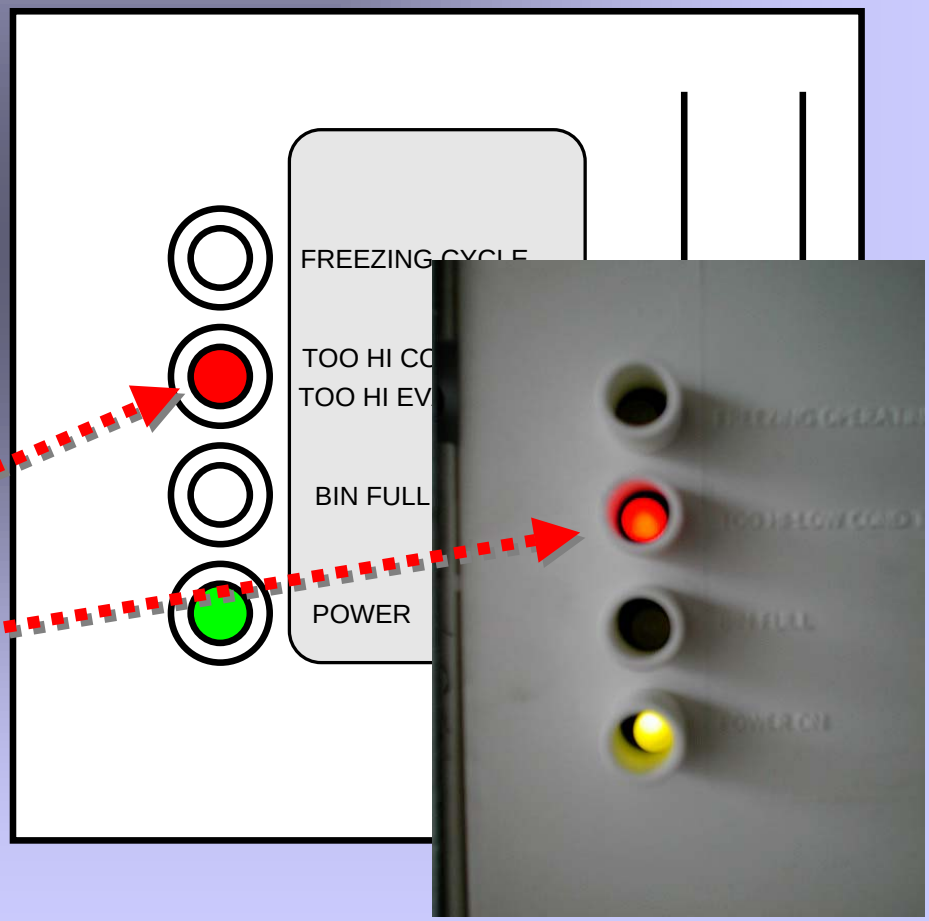


MC SERIES

OPERATING PRINCIPLES - ALARM

TOO HI EVAP. TEMPERATURE

In case the evaporating temperature remains higher then **0°C after 15 minutes** from the beginning of the freezing cycle the PC Board will switch OFF immediately the entire machine with the **blinking** of the **Red ALARM LED**.

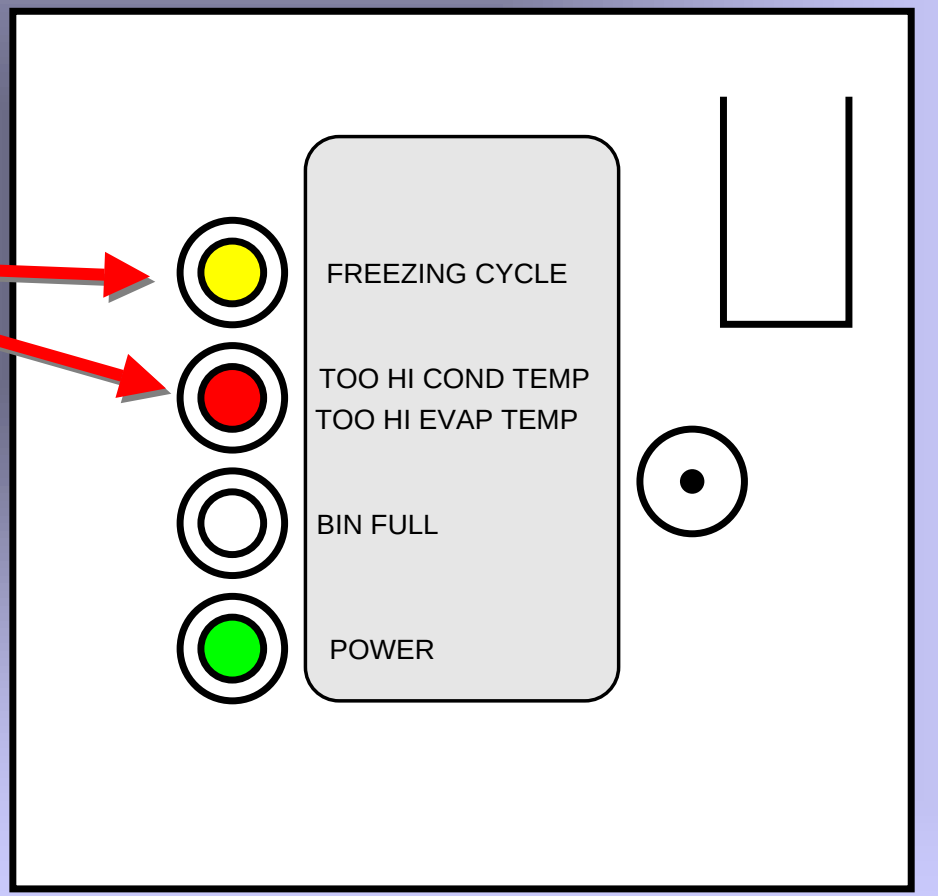


MC SERIES

OPERATING PRINCIPLES - ALARM

CONDENSER SENSOR OUT OF ORDER

In case both the Red and Yellow LED are **light** **ON steady** the condenser sensor is out of order and need to be replaced.

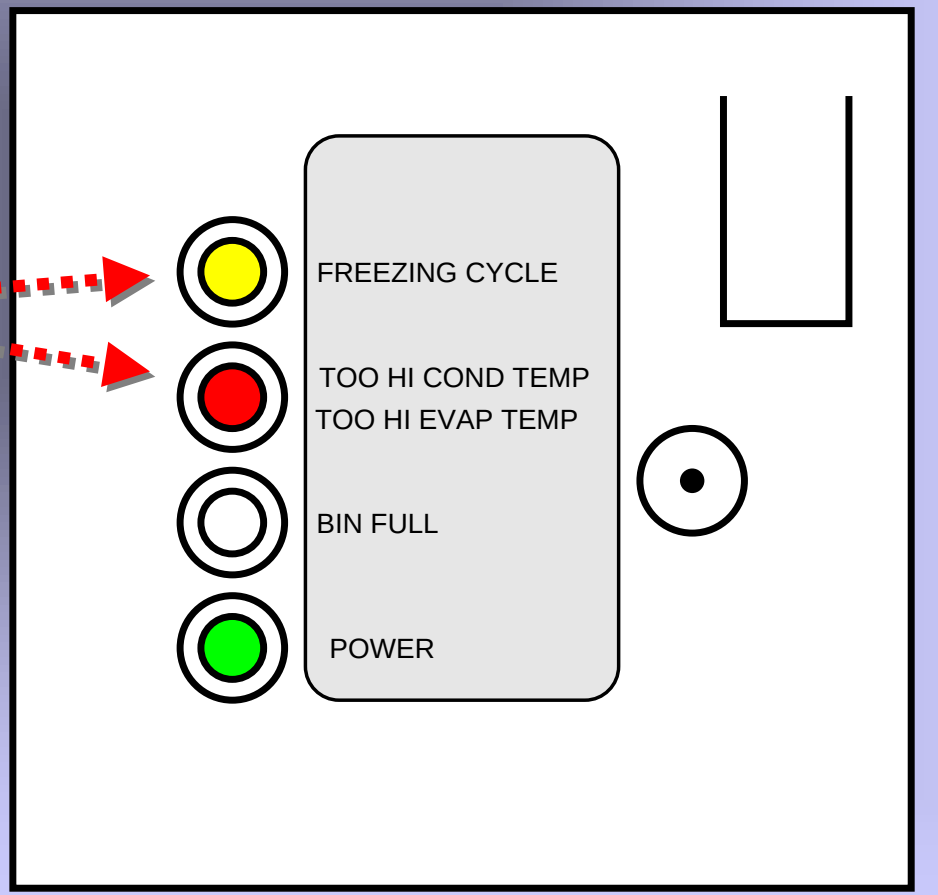


MC SERIES

OPERATING PRINCIPLES - ALARM

EVAPORATOR SENSOR OUT OF ORDER

In case both the Red and Yellow LED are **blinking** the evaporator sensor is out of order and need to be replaced.



MC SERIES

OPERATING PRINCIPLES - BIN FULL

As soon as the ice cubes are in between the transmitter and receiver sensor of the Optical Ice Level Control….

MC SERIES

OPERATING PRINCIPLES - BIN FULL

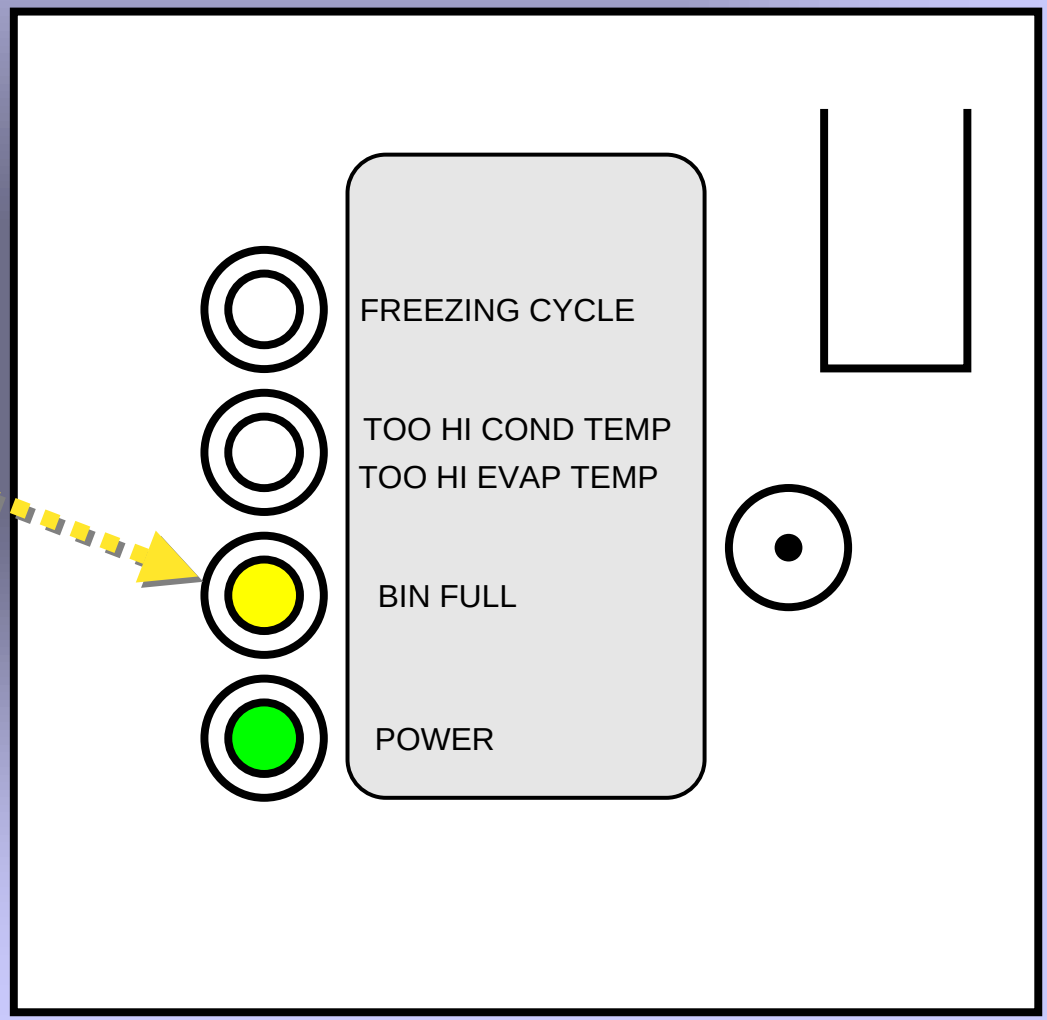
….immediately

the **Bin Full**

Yellow LED

starts to blink

and after…..



MC SERIES

OPERATING PRINCIPLES - BIN FULL

….one minute

the PC Board

switch OFF the

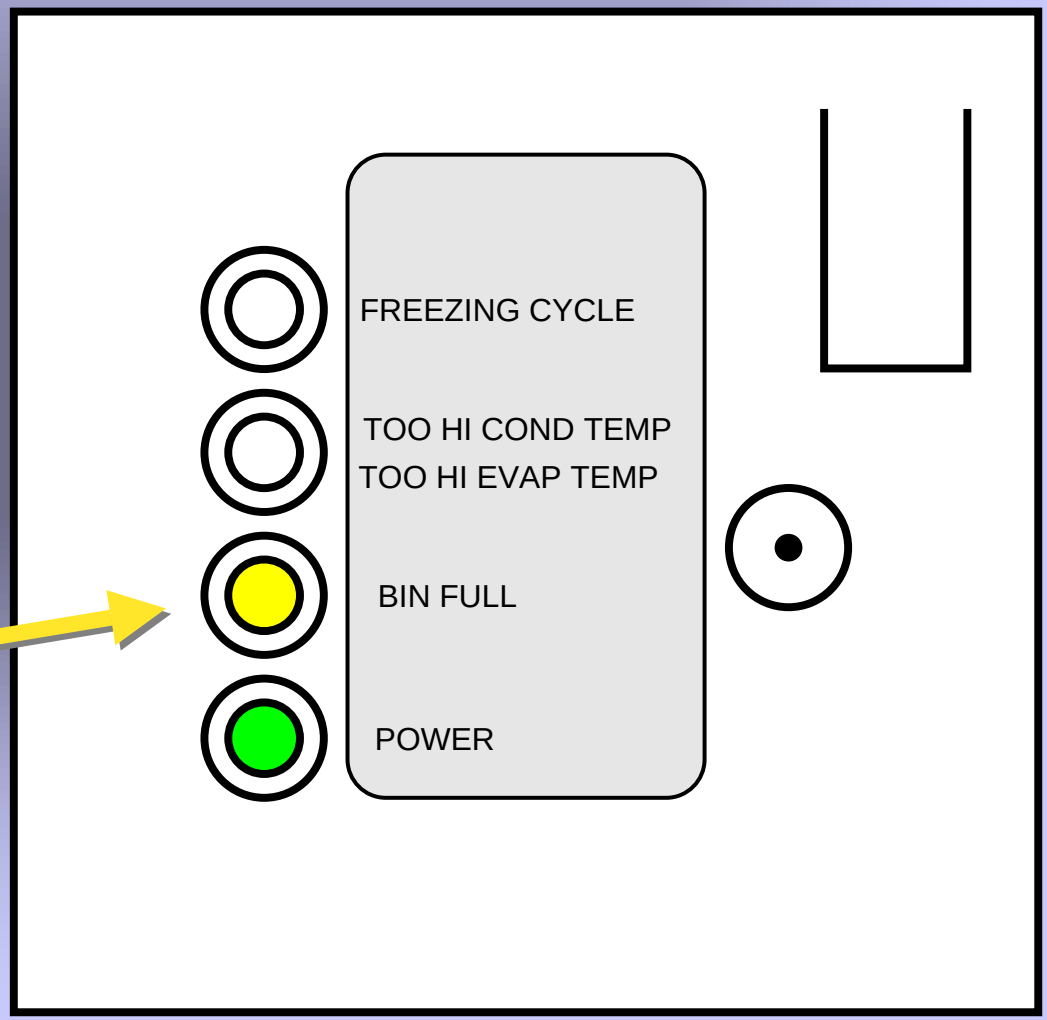
entire machine

with the light

ON of **BIN**

FULL Yellow

LED.



MC SERIES

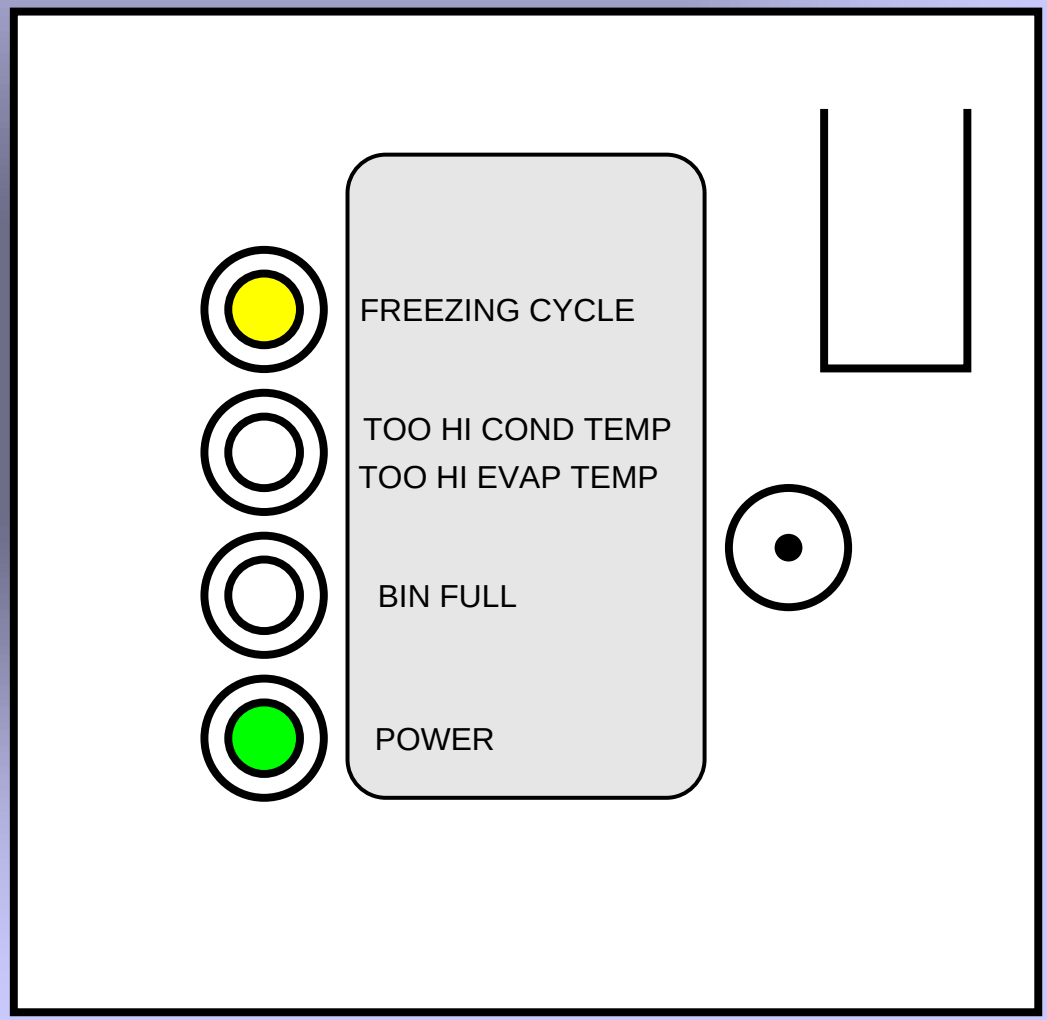
OPERATING PRINCIPLES - BIN FULL

When ice is scooped out from the storage bin….

MC SERIES

OPERATING PRINCIPLES - BIN FULL

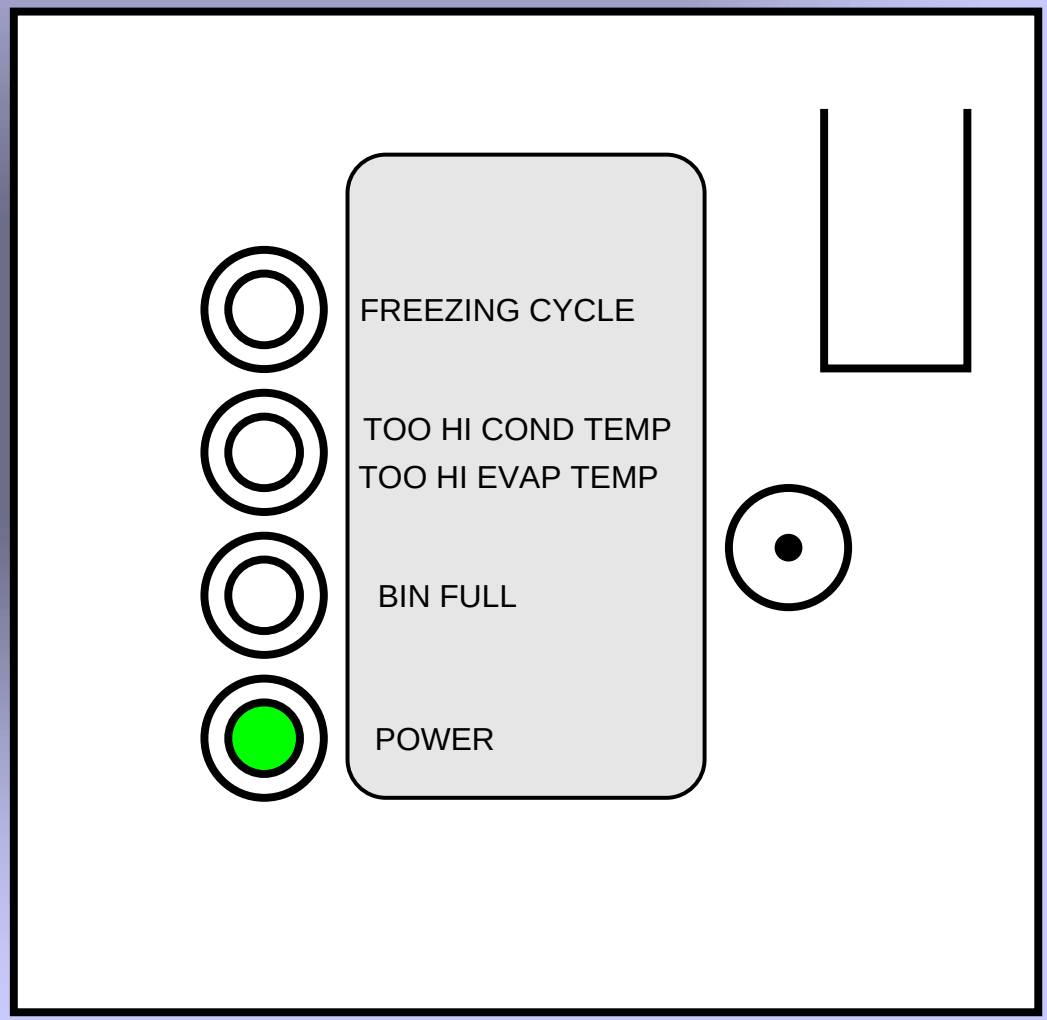
…. after six-seven seconds the machine restart in the operation from **the beginning of the freezing** cycle when the **evaporator temperature is above 0ºC** ....



MC SERIES

OPERATING PRINCIPLES - BIN FULL

……..or **from the harvest cycle** when the **evaporating temperature is below 0ºC** in order to avoid any possibility of double freezing cycle.



MC SERIES

OPERATING PRINCIPLES - POWER OFF

In case of **black out in power** the machine re-starts (when power is back) through the 5 minutes water filling phase with the compressor:

ON **When the evaporator temperature is < 0°C**

OFF When the evaporator temperature is > 0°C

MC SERIES

OPERATING PRINCIPLES - POWER OFF

In case of **black out in power** the machine re-starts (when power is back) through the 5 minutes water filling phase with the compressor:

ON When the evaporator temperature is < 0ºC

OFF When the evaporator temperature is > 0ºC

MC SERIES

COMPONENTS - REFRIGERANT SYSTEM

LOCATION OF REFRIGERANT COMPONENTS

The components of the refrigerant system of the MC series Models are composed by:

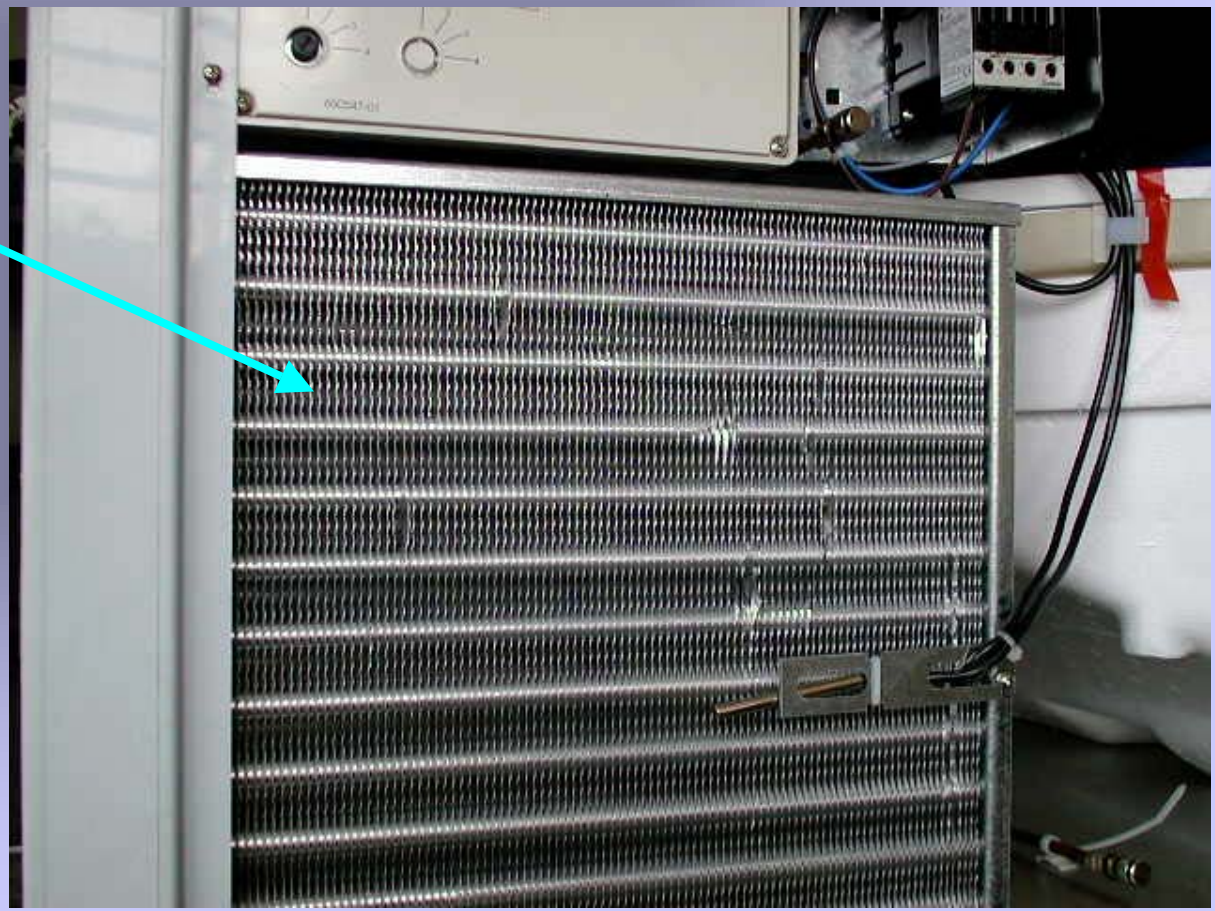
- **COMPRESSOR**

MC SERIES

COMPONENTS - REFRIGERANT SYSTEM

LOCATION OF REFRIGERANT COMPONENTS

- **COMPRESSOR**
- **CONDENSER**

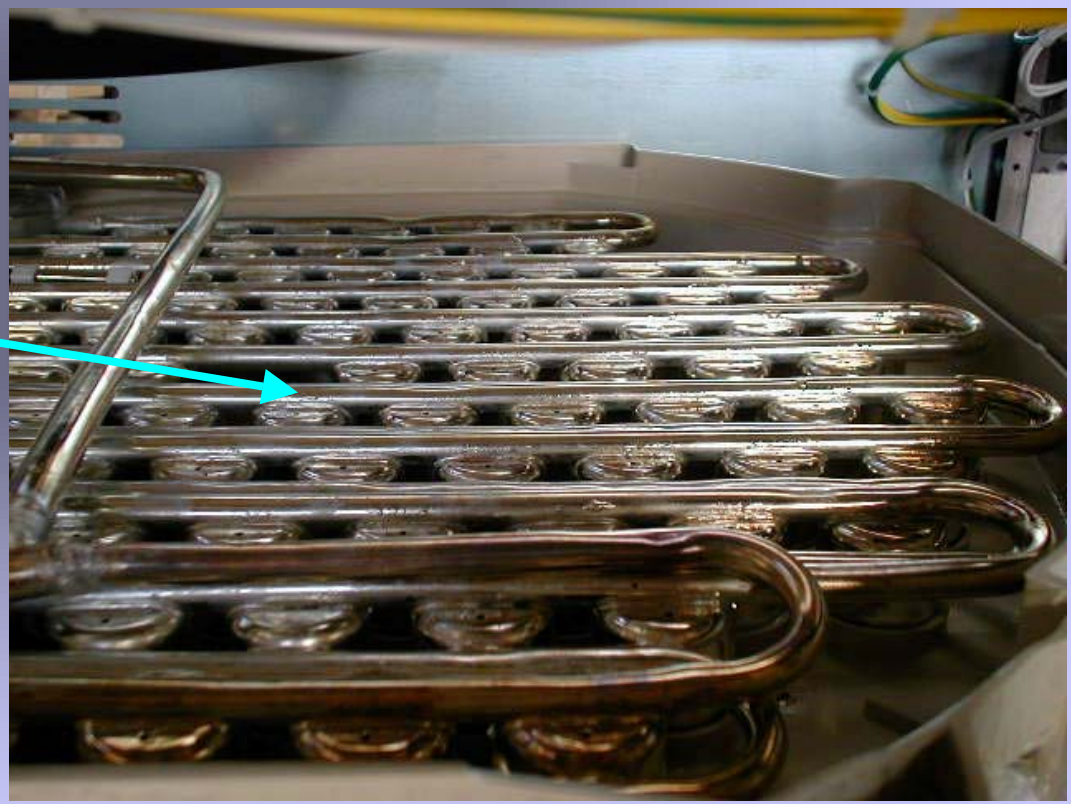


MC SERIES

COMPONENTS - REFRIGERANT SYSTEM

LOCATION OF REFRIGERANT COMPONENTS

- **COMPRESSOR**
- **CONDENSER**
- **EVAPORATOR**

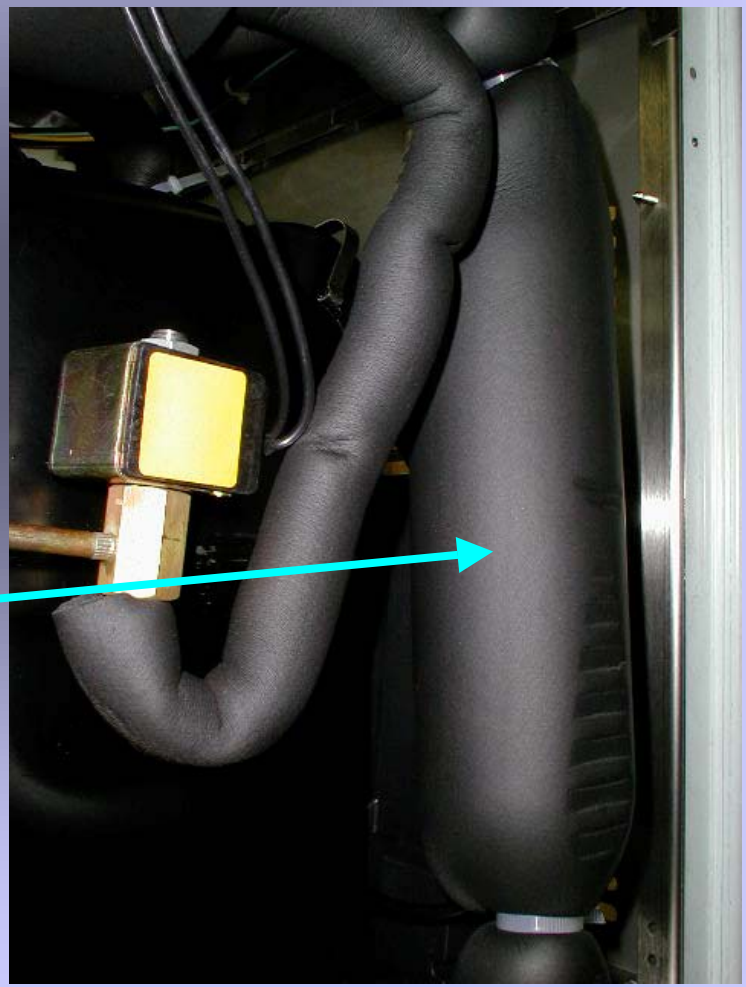


MC SERIES

COMPONENTS - REFRIGERANT SYSTEM

LOCATION OF REFRIGERANT COMPONENTS

- **COMPRESSOR**
- **CONDENSER**
- **EVAPORATOR**
- **SUCTION LINE AND CAPILLARY TUBE**

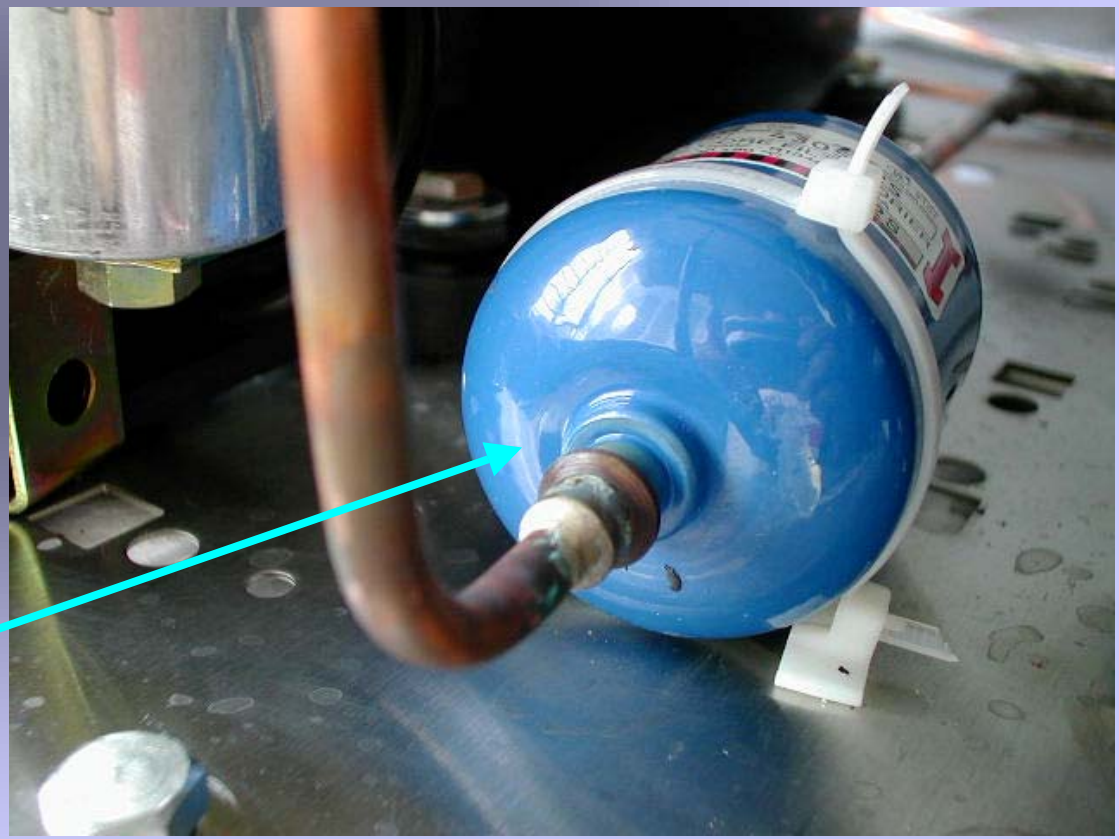


MC SERIES

COMPONENTS - REFRIGERANT SYSTEM

LOCATION OF REFRIGERANT COMPONENTS

- **COMPRESSOR**
- **CONDENSER**
- **EVAPORATOR**
- **SUCTION LINE AND CAPILLARY TUBE**
- **DRIER**



MC SERIES

COMPONENTS - REFRIGERANT SYSTEM

LOCATION OF REFRIGERANT COMPONENTS

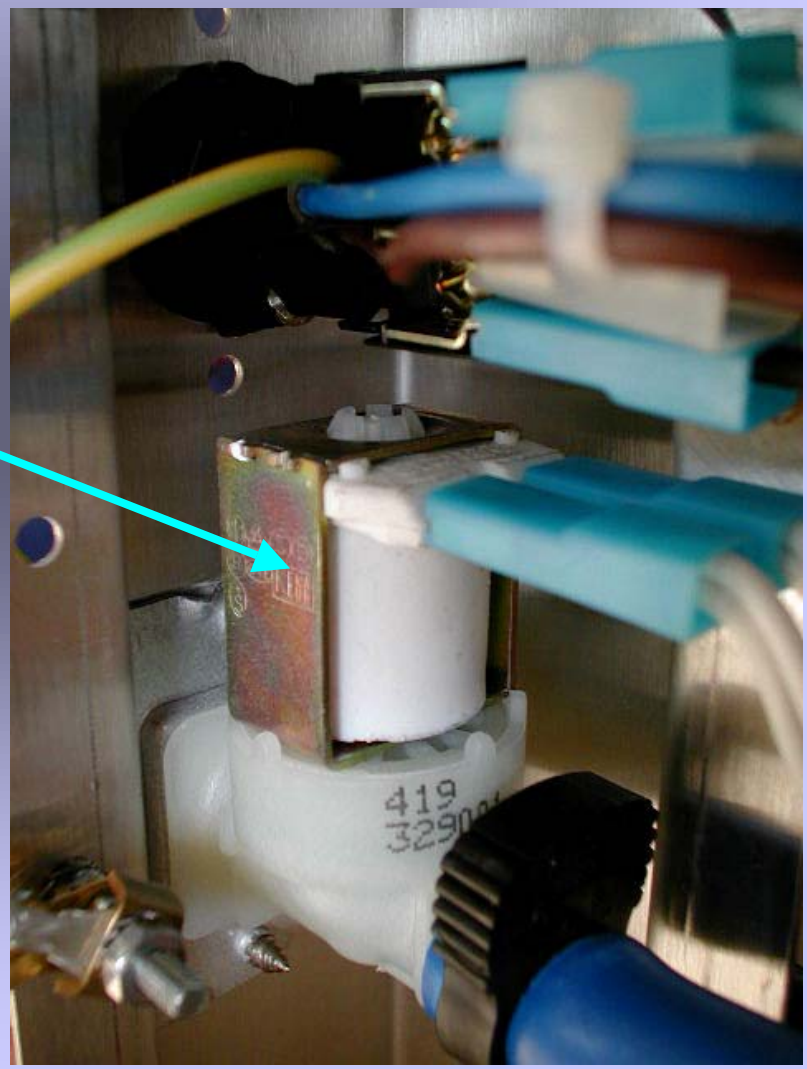
- **COMPRESSOR**
- **CONDENSER**
- **EVAPORATOR**
- **SUCTION LINE AND CAPILLARY TUBE**
- **DRIER**
- **HOT GAS VALVE**

MC SERIES

COMPONENTS - WATER SYSTEM

The components of the water system of the MC Series Models are composed by:

- **WATER INLET VALVE**



MC SERIES

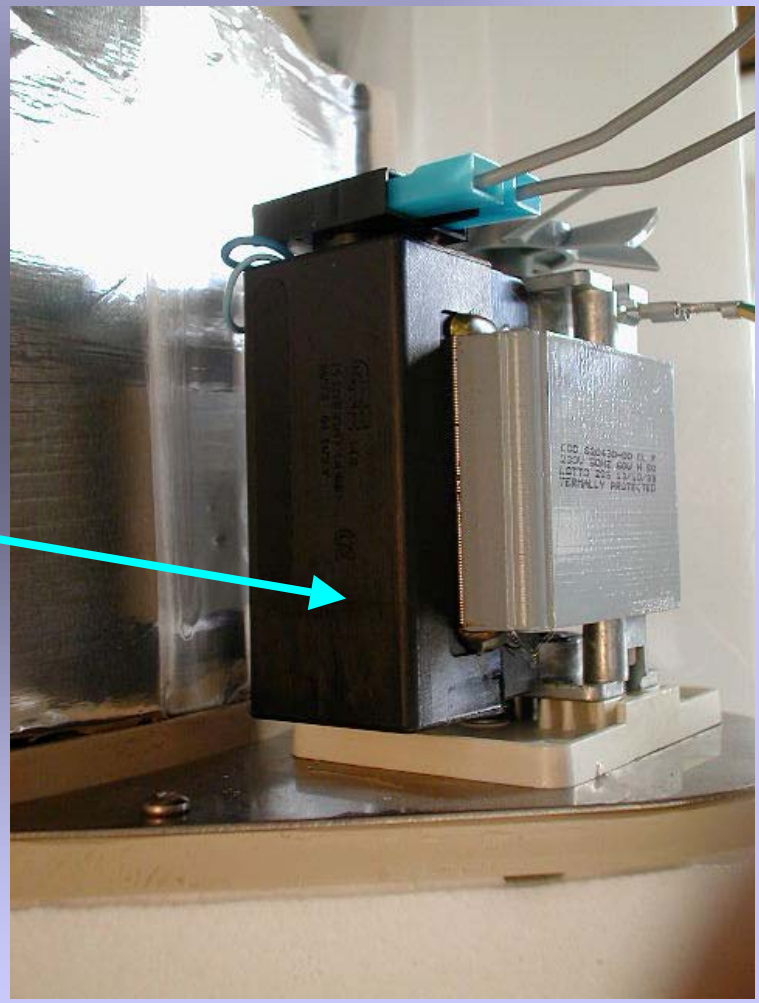
COMPONENTS - WATER SYSTEM

- **WATER INLET VALVE**
- **WATER SUMP**

MC SERIES

COMPONENTS - WATER SYSTEM

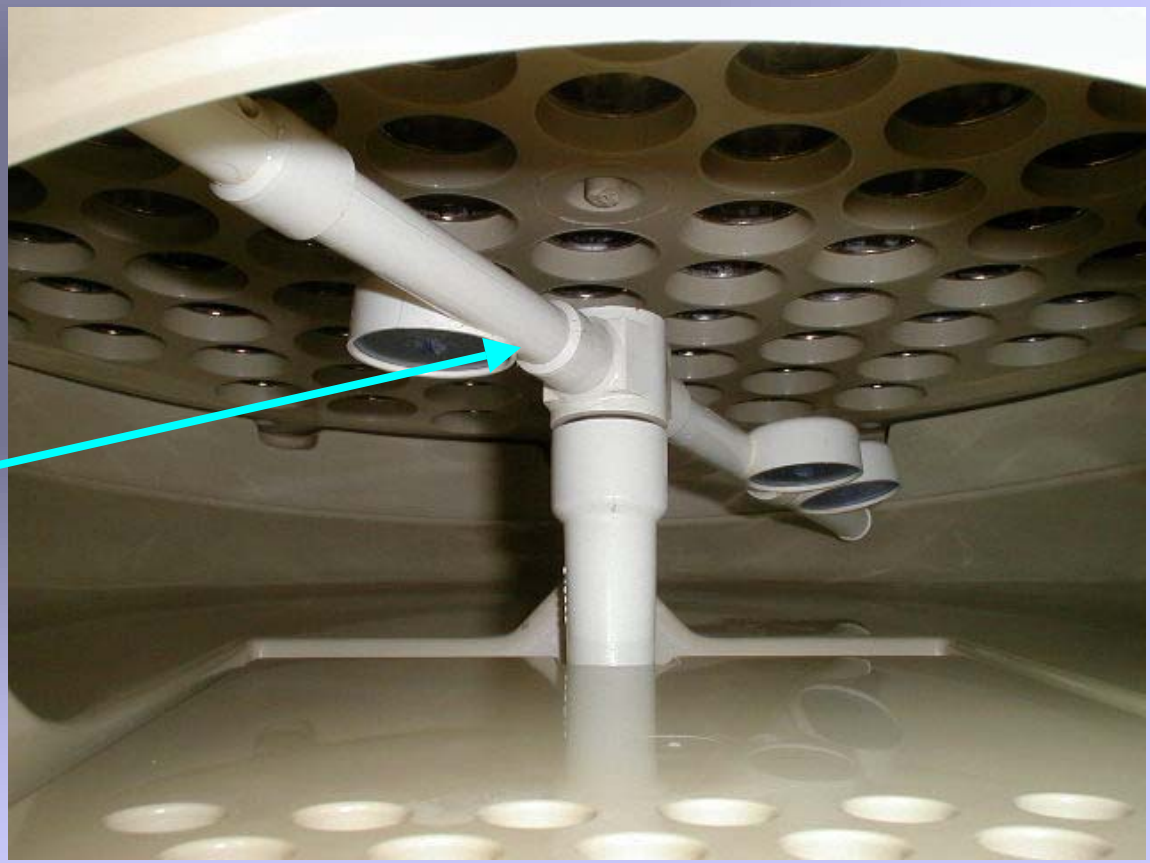
- **WATER INLET VALVE**
- **WATER SUMP**
- **WATER PUMP**



MC SERIES

COMPONENTS - WATER SYSTEM

- **WATER INLET VALVE**
- **WATER SUMP**
- **WATER PUMP**
- **SPRAY BAR**



MC SERIES

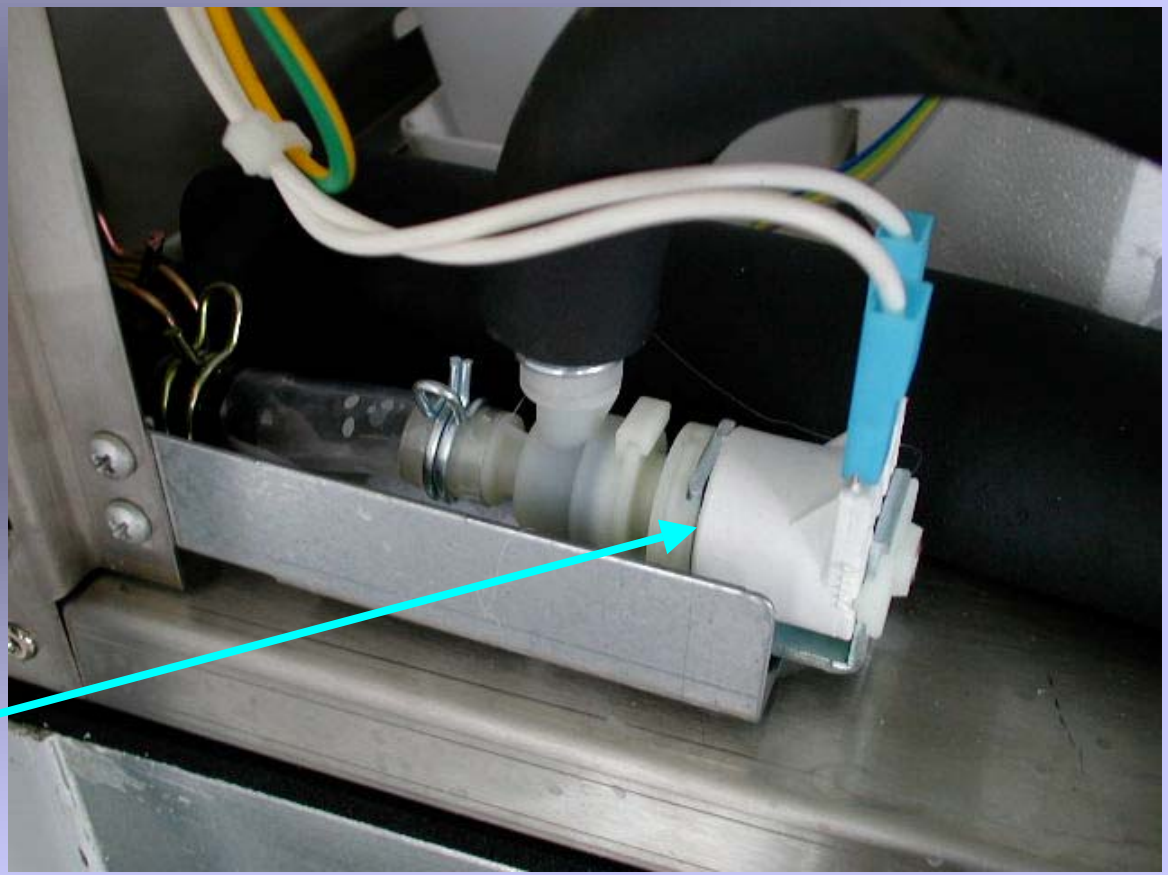
COMPONENTS - WATER SYSTEM

- **WATER INLET VALVE**
- **WATER SUMP**
- **WATER PUMP**
- **SPRAY BAR**
- **OVERFLOW**

MC SERIES

COMPONENTS - WATER SYSTEM

- **WATER INLET VALVE**
- **WATER SUMP**
- **WATER PUMP**
- **SPRAY BAR**
- **OVERFLOW**
- **WATER DRAIN VALVE**



MC SERIES

COMPONENTS - ELECTRONIC CONTROLS

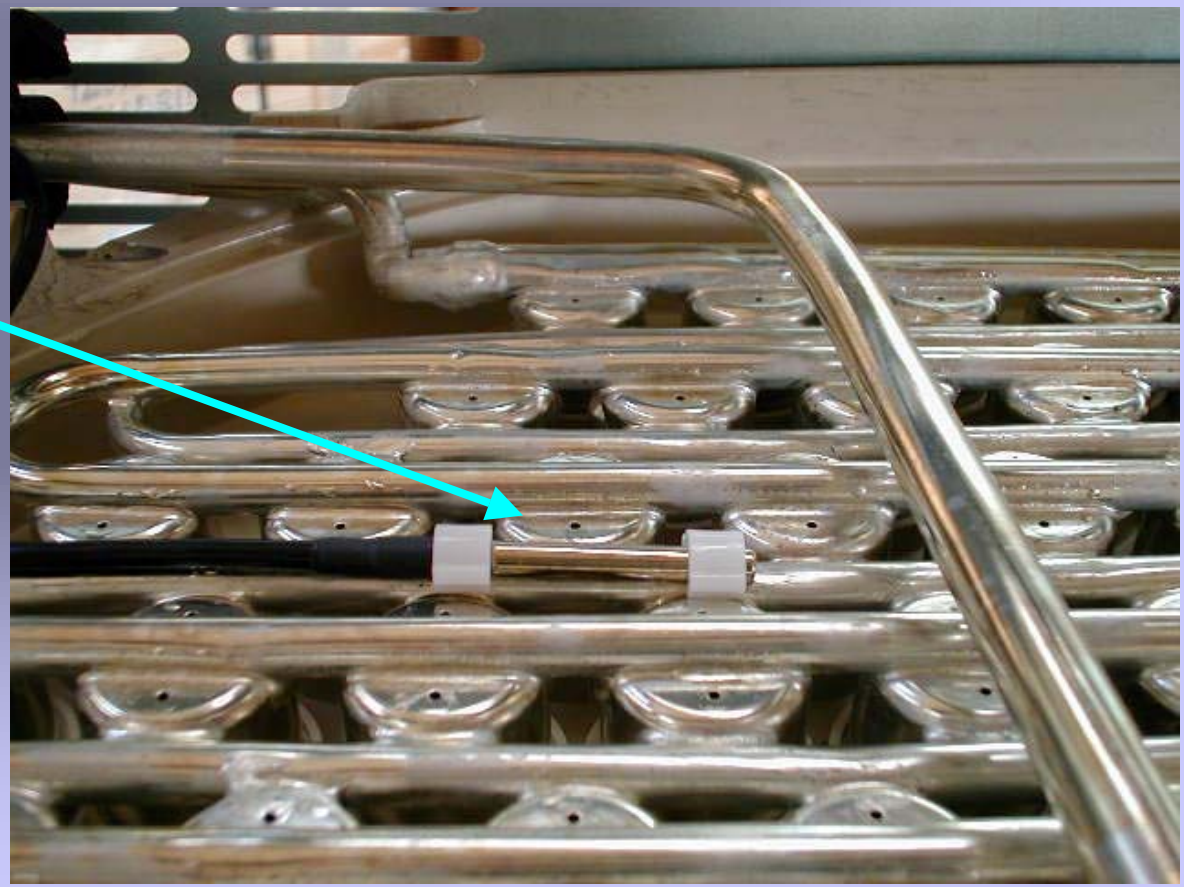
The components of the Electronic System of the MC Series Models are composed by:

- **PC BOARD**

MC SERIES

COMPONENTS - ELECTRONIC CONTROLS

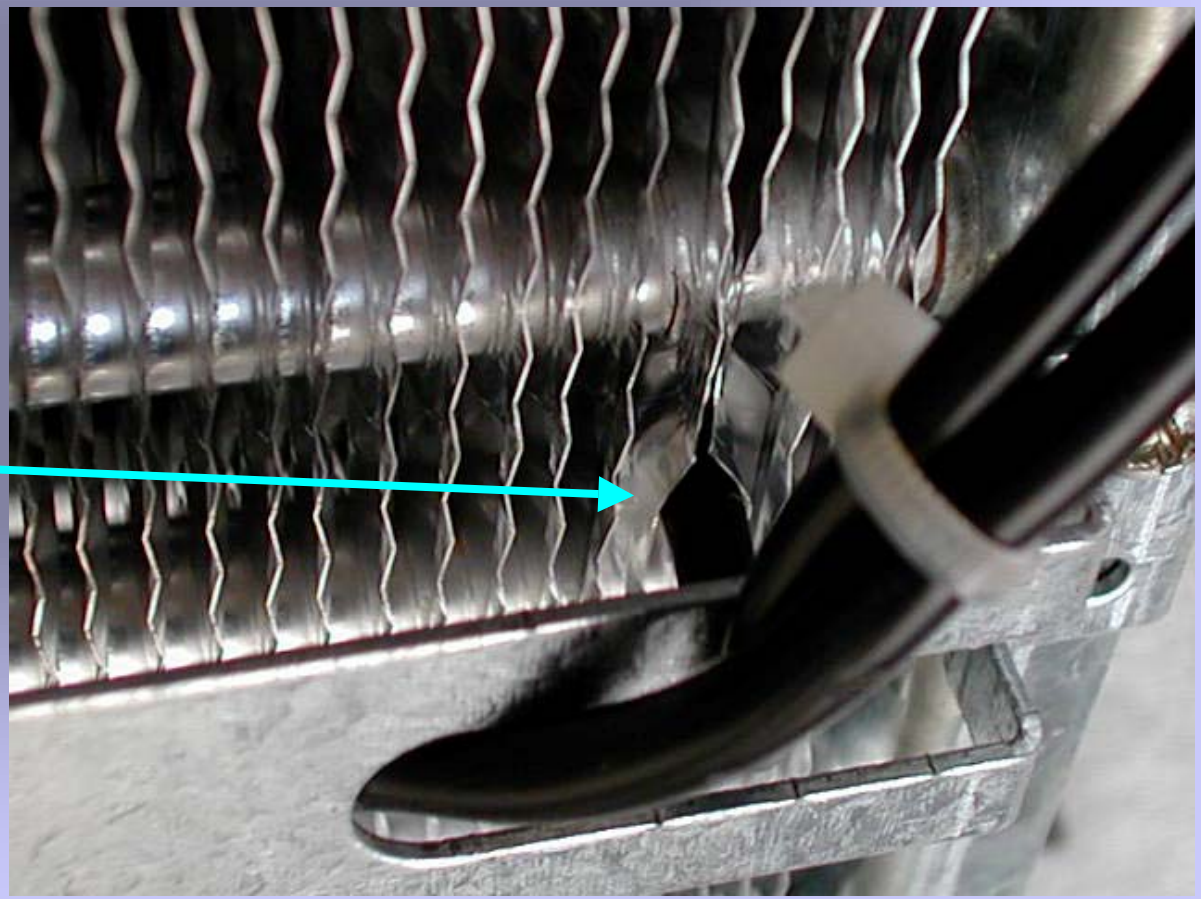
- **PC BOARD**
- **EVAPORATOR SENSOR**



MC SERIES

COMPONENTS - ELECTRONIC CONTROLS

- **PC BOARD**
- **EVAPORATOR SENSOR**
- **CONDENSER SENSOR**



MC SERIES

COMPONENTS - ELECTRONIC CONTROLS

- **PC BOARD**
- **EVAPORATOR SENSOR**
- **CONDENSER SENSOR**
- **OPTICAL ICE LEVEL CONTROL**

MC SERIES
END FIRST HALF